The PHOTOFACT® Servicer

SET475 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ FEB., 1960

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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A588

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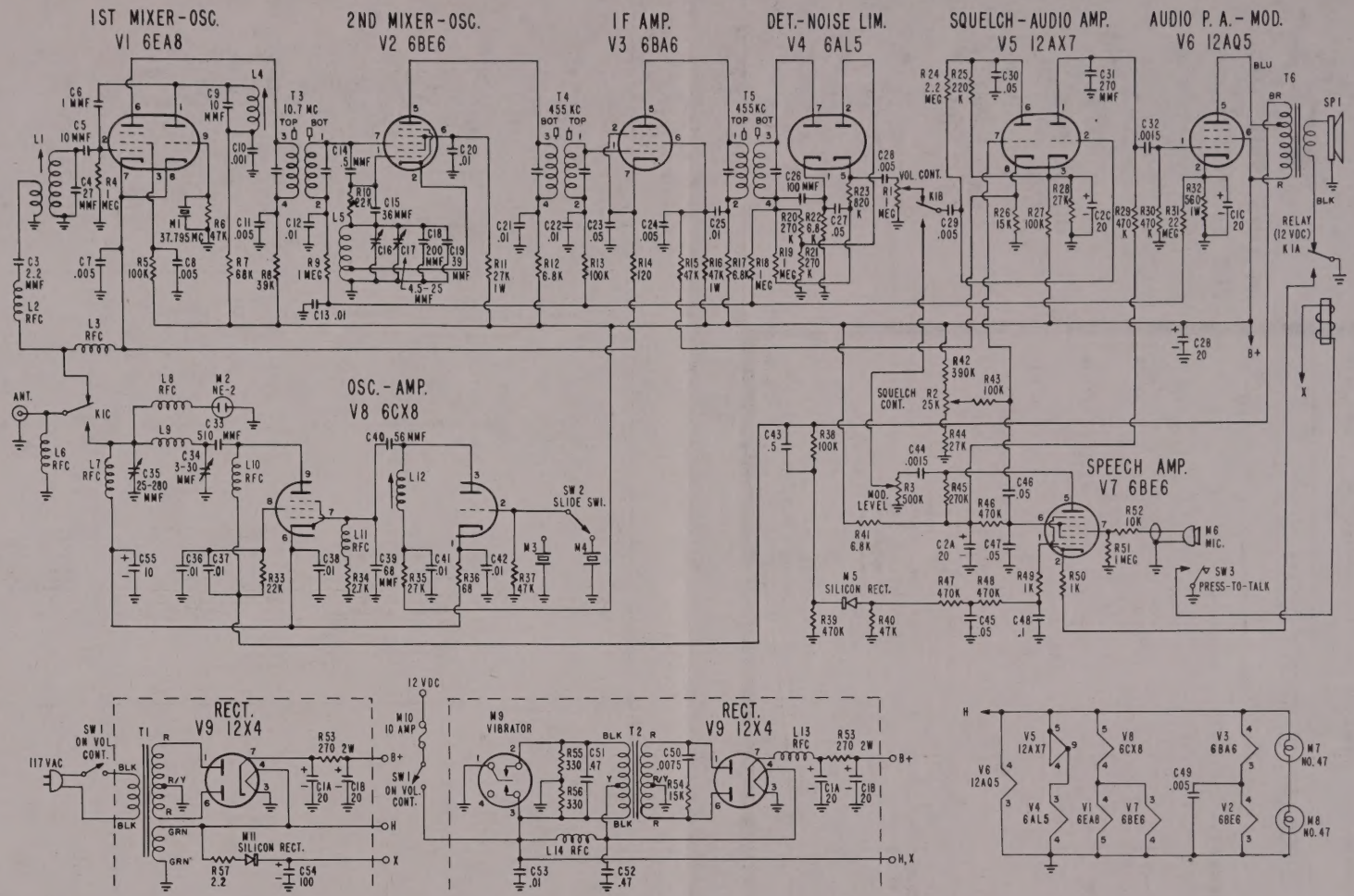
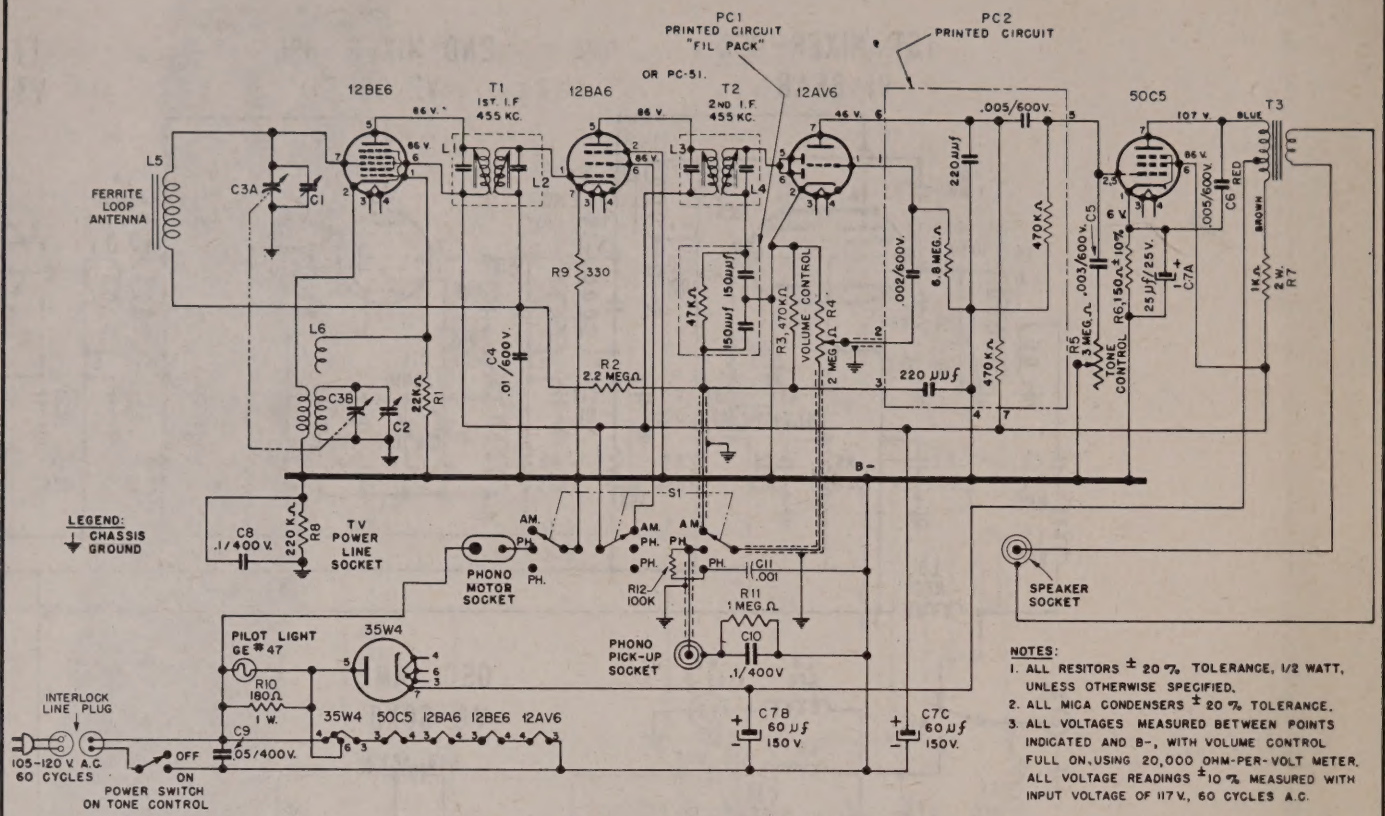


CAPACITOR VALUES IN MICROFARAD UNLESS OTHERWISE NOTED.
RESISTOR VALUES IN OHMS UNLESS OTHERWISE NOTED.

REGENCY MODELS CB-27, CBM-27

Schematic Diagram Courtesy of Regency Div., I. D. E. A. Inc.



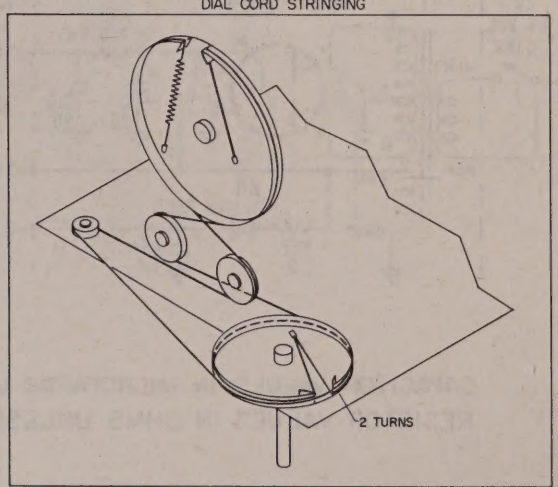
NOTES:

1. ALL RESITORS ± 20 % TOLERANCE, 1/2 WATT, UNLESS OTHERWISE SPECIFIED.
2. ALL MICA CONDENSERS ± 20 % TOLERANCE.
3. ALL VOLTAGES MEASURED BETWEEN POINTS INDICATED AND B-, WITH VOLUME CONTROL FULL ON, USING 20,000 OHM-PER-VOLT METER. ALL VOLTAGE READINGS ± 10 % MEASURED WITH INPUT VOLTAGE OF 117 V., 60 CYCLES A.C.

ALIGNMENT PROCEDURE CHART

STEP	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO -	SET SIGNAL GENERATOR TO -	TURN RECEIVER DIAL TO -	ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT. (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.)
1	ANTENNA SECTION TUNING CONDENSER IN SERIES WITH .1 MFD. COND.	455 KC.	FULL CLOCKWISE POSITION. (CONDENSER PLATES FULLY OPEN)	L4, L3, L2, L1 AND REPEAT IN SAME ORDER (1ST. AND 2ND. I.F. TRANSFORMERS)
2	USE RADIATED SIGNAL	1500 KC.	1500 KC. (150 ON DIAL).	C 2 (OSCILLATOR)
3		1500 KC.	MAXIMUM SIGNAL (APPROX. 150 ON DIAL)	C1 (ANTENNA)
4		REPEAT STEPS 2 AND 3		

DIAL CORD STRINGING



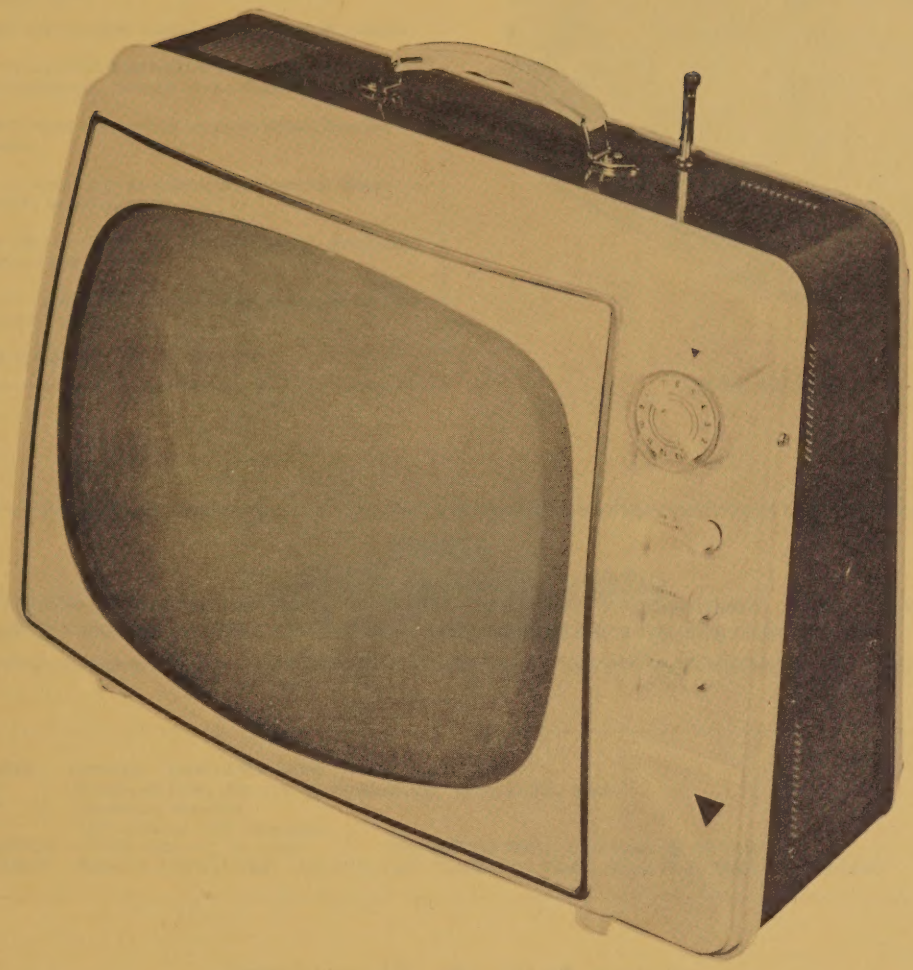
OLYMPIC MODEL A588

Schematic Diagram Courtesy of Olympic Radio & Television Inc.

PHOTOFACT® Folder

**CORONADO MODEL
TV17-9405A**

CORONADO MODEL
TV17-9405A



MODEL TV17-9405A

CORONADO MODEL
TV17-9405A

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

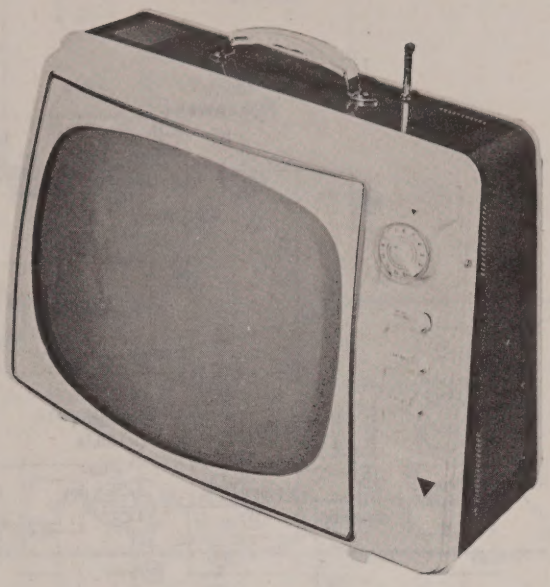
PHOTOFACT® Folder

CORONADO MODEL
TV17-9405A

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs from the front of cabinet.
2. Remove 6 metal screws holding rear cover. Remove antenna connections. Remove rear cover.
3. Remove 5 metal screws holding front glass. Remove the front glass.
4. Remove 3 metal screws holding front control bracket to picture tube mounting strip.
5. Remove speaker leads, picture tube socket, yoke plug, antenna lead and HV lead.
6. Remove 4 chassis bolts from bottom of cabinet and one one each side of chassis.
7. Remove chassis.



MODEL TV17-9405A

CAUTION

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

Care should be exercised when connecting test equipment or physically contacting chassis. Isolation devices employed by manufacturer should be checked and properly connected before returning receiver to owner.

TRADE NAME	Coronado, Model TV17-9405A
SUPPLIER	Gamble-Skogmo, Inc., 15 North 8th Street, Minneapolis, Minn.
TYPE SET	Television Receiver
TUBES	VHF-Sixteen, UHF-Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 140 Watts, 1.45 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 5 push-on type knobs from the front. Remove 5 screws holding trim. Tilt glass out and remove.

FUSE DEVICE

A 5.5Ω fusible resistor is used for low voltage power supply protection. (For location, see "Upper Chassis-Top View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up VHF Oscillator, remove plug in side of cabinet.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

No provision is made to vary the focus on this receiver.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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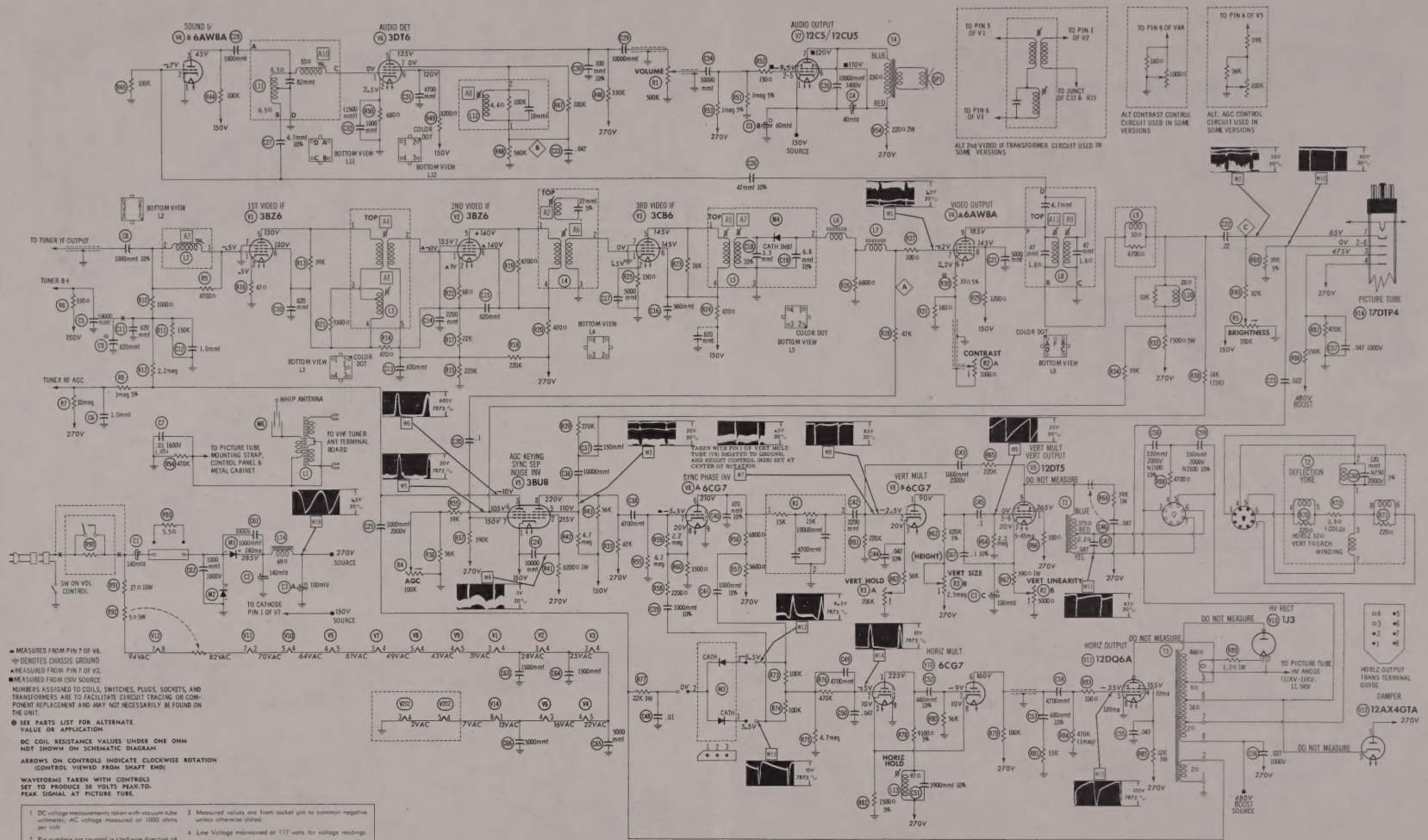
SET 475 FOLDER 1



▲ MEASURED FROM PIN 7 OF V8.
⊕ DENOTES CHASSIS GROUND
▲ MEASURED FROM PIN 7 OF V2.
● MEASURED FROM 150V SOURCE

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.

1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.

2 Pin numbers are counted in clockwise direction on bottom of socket.

3 Measured values are from socket pin to common negative unless otherwise stated.

4 Line Voltage maintained at 117 volts for voltage readings.

5 All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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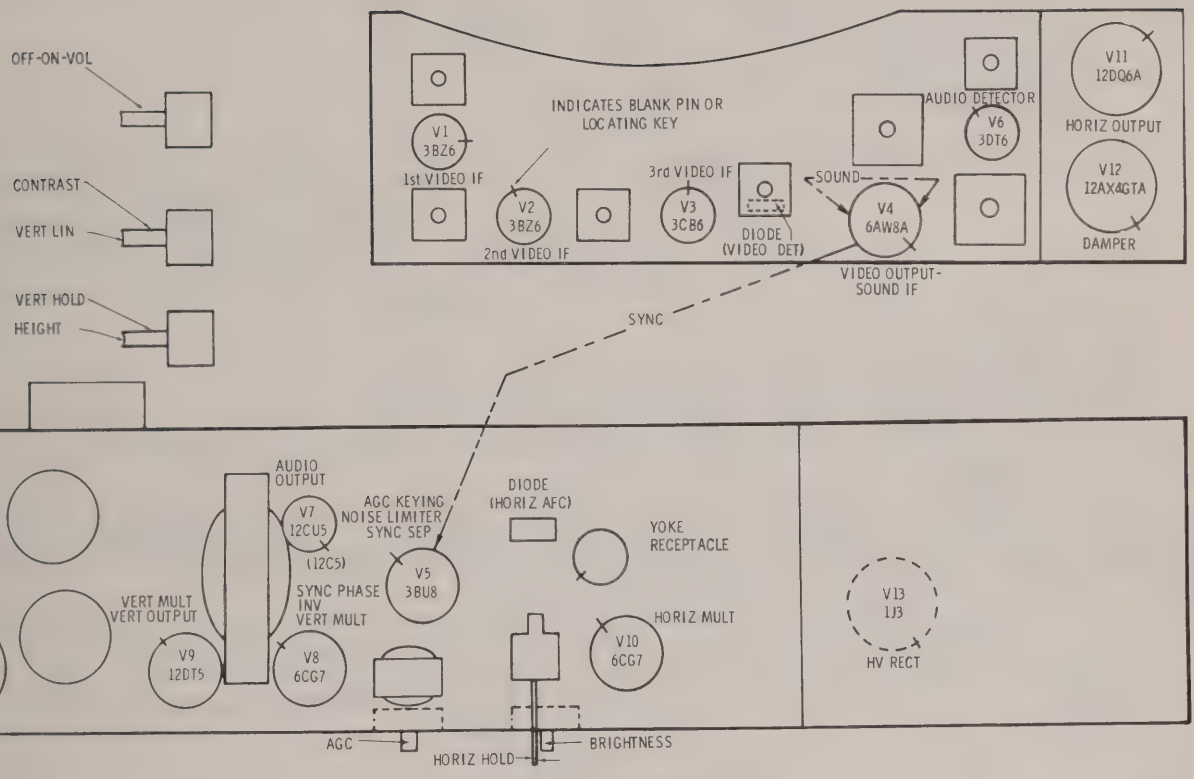
CORONADO MODEL TV17-9405A

TUBE PLACEMENT CHART

TOP VIEW



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

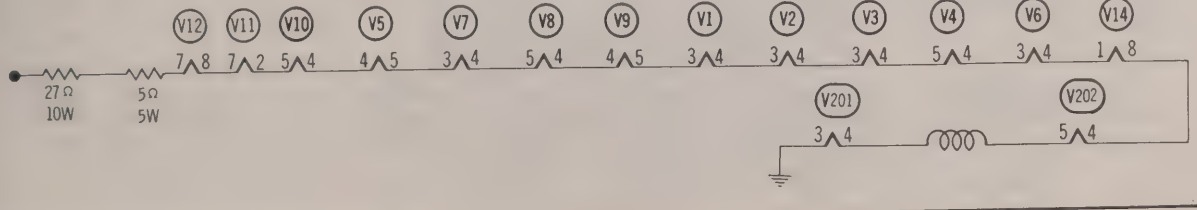
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor, Rect. (B+)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, Rect. (B+)
Vert. off freq. V8, V9
Horiz. off freq. V8, Diode (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



CORONADO MODEL TV17-9405A

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Set Contrast fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44MC (10MC Swp)	41.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (A). Low side to chassis. (Across Video Det. load)	A1	Adjust to place marker in 41.25MC trap notch. (See Fig. 1).
2.	"	"	"	47.25MC	"	"	A2	Adjust to place marker in other trap notch.
3.	"	"	"	42.75MC 45.75MC	"	"	Mixer Plate Coil & A3 thru A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate Coil and A3 for maximum gain. A4 and A5 to shape high frequency side of response curve. A6 and A7 is adjusted to shape low frequency side.

SOUND IF ALIGNMENT

Connect an output meter across speaker voice coil.
Connect the DC probe of the VTVM to point (B). Common to chassis. Tune in a strong air signal and adjust A8 for maximum output. If two peaks occur during this adjustment, use the one resulting in the highest reading on the VTVM.
Reduce the signal strength by disconnecting the antenna. Adjust A9 and A10 for maximum undistorted sound. Further reduce the signal by moving the antenna lead further away. Retouch A9 and A10 for maximum undistorted sound. Repeat entire procedure if necessary.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.05mfd	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to point (C). Common to chassis. (Use 0-10VAC scale).	All	Adjust for MINIMUM deflection.

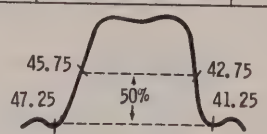
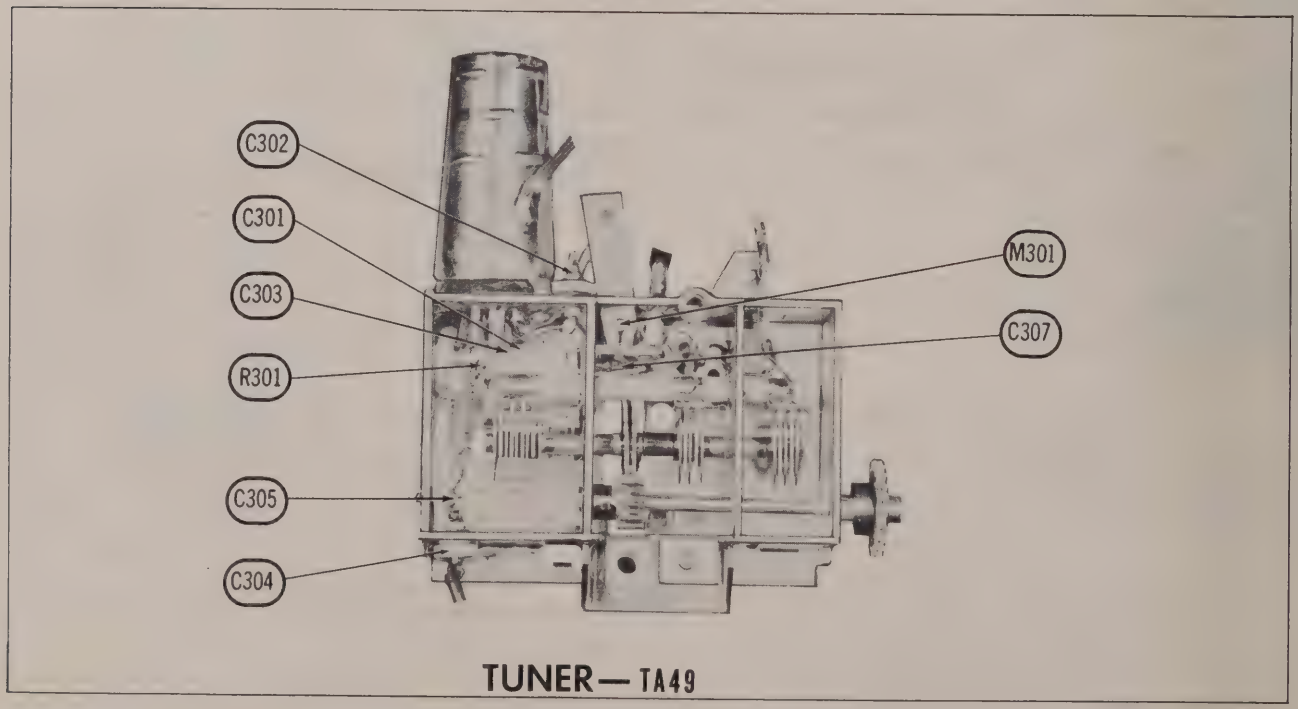
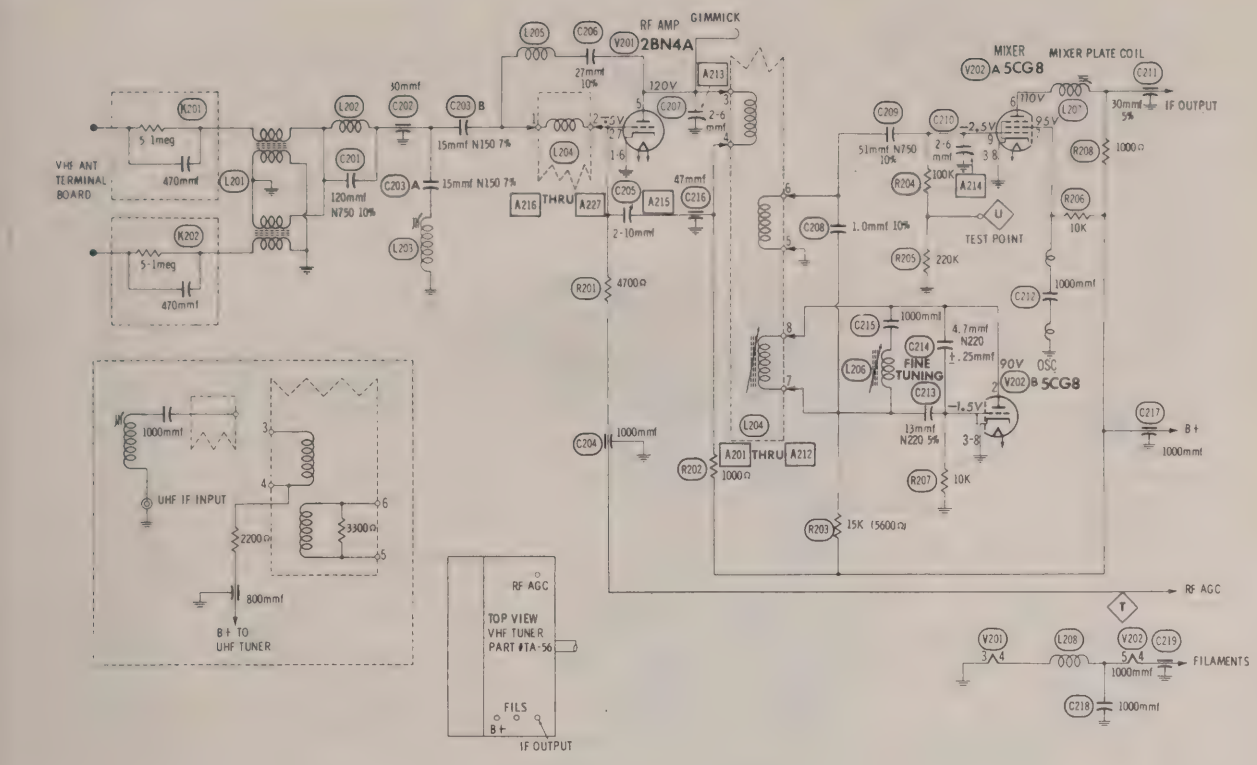


FIG. 1

TUNER ALIGNMENT LOCATED ON PAGE 12



TUNER — TA49



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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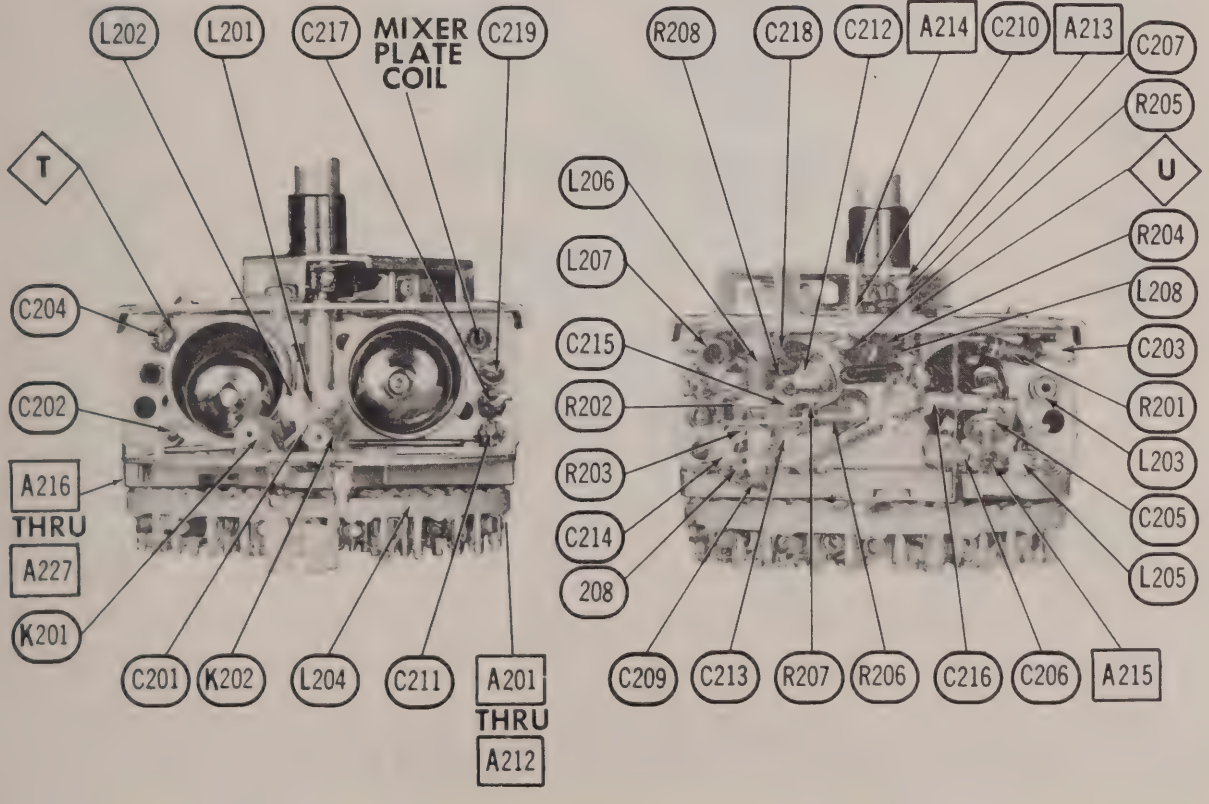
VHF TUNER TA-56



TUNER TA-56

CORONADO MODEL TV17-9405A

FOLDER 1

TUNER PARTS LIST AND DESCRIPTIONS

TA-56

TUBES

ITEM No.	USE	TYPE
V201	RF Amplifier	2BN4A
V202	Mixer-Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N750 10%			TCZ-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C202	30	#13M350U300N-02						
C203A	15 N150 7%	#13L8PG150N2				* *		10TCP-Q15
B	15 N150 7%					* *		10TCP-Q15
C204	1000		EF-001	MFT-1000		CCF-102	CT280A	
C205	2-10	#31B-902-09		829-10				
C206	.27 10%	#13D-111-45						
C207	2-6			829-6		VC-3	CT552	
C208	1.0 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C209	51 N750 10%	(31MMF-N470)*		TCN-51		CCTN-470		
C210	2-6			829-6		VC-3	CT522	
C211	30 5%	#13M350U300J-01						
C212	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C213	13 N220 5%	#13L8R130J				* *		10TCR-Q12
C214	4.7 N220 ±.25mmf	#13L8R4R7C				* *		10TCR-V47
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C216	47	#13M130U470J01		MFT-50				
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		BPD-001	DD-001	BYA10D1	CCD-102	B-210	5HK-D10
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	

\# "Standard Coil" Part Number.
* Alternate Value
** Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	4700Ω	
R202	1000Ω	
R203	15K	(5600Ω) *
R204	100K	
R205	220K	
R206	10K	
R207	10K	
R208	1000Ω	

* Alternate Value

COMPONENT COMBINATIONS

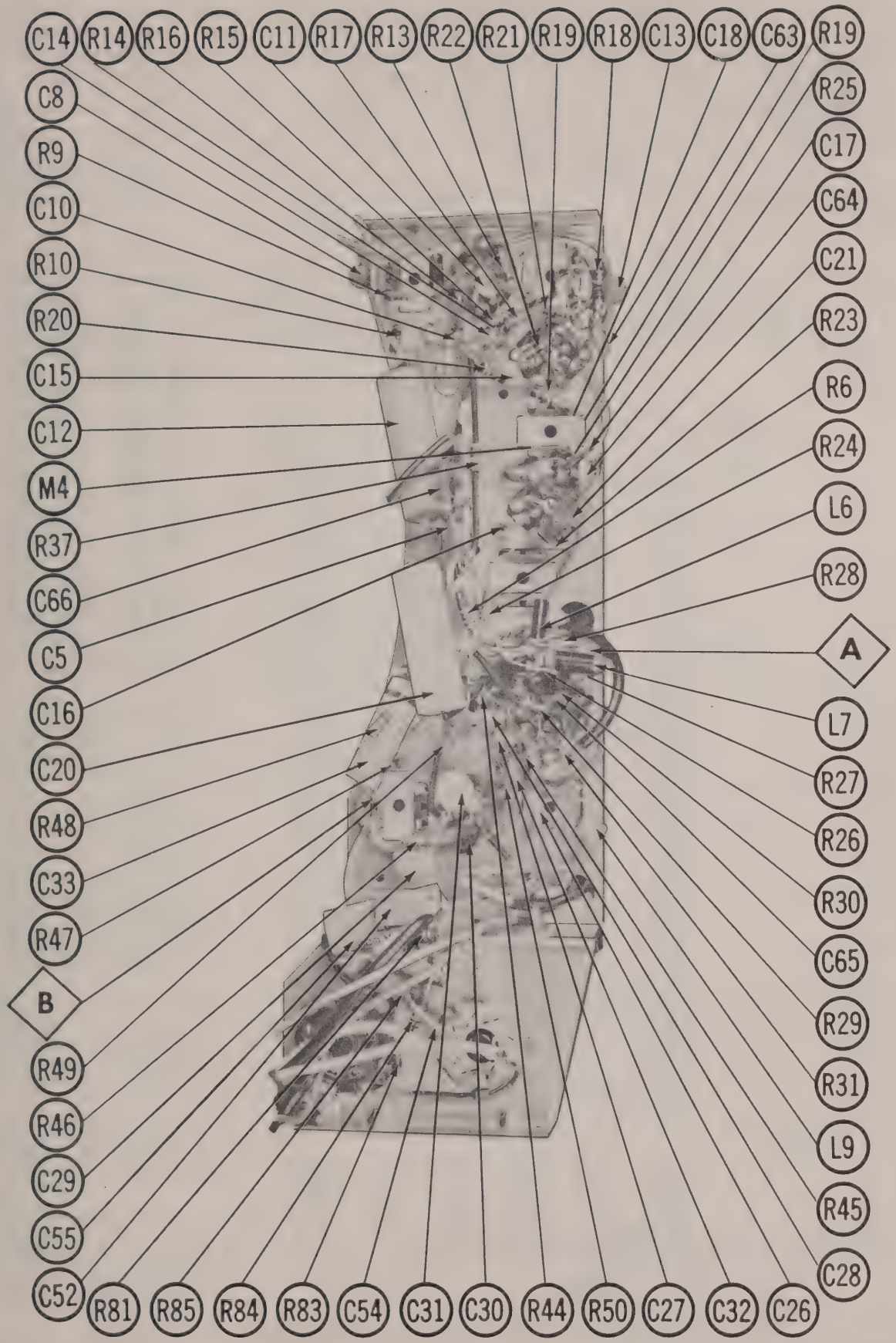
ITEM No.	USE	DESCRIPTION	PART No.	REPLACEMENT DATA
K201	Antenna Filter	470mmf, .5-1meg	13P-195	Centralab RC-471 Sprague AC1-1
K202	Antenna Filter	470mmf, .5-1meg	13P-195	Centralab RC-471 Sprague AC1-1

Note : Part numbers listed ablve are "Standard Coil" Part numbers.

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T-3397	
L202	RF Choke	34A-748	
L203	IF Trap Coil	34A-762	
L204	Ant., RF, Mixer Grid & Osc. Coils	31T-3454-034-000	Channel 2-13 Includes Rotor & Coil Assy.
L205	RF Choke	34A-1005	
L206	Fine Tuning Coil	34A-787-03	
L207	Mixer Plate Coil	31UA-580-017	
L208	Fil. Choke	31K-137-027	

Note: Part numbers listed above are "Standard Coil" Part numbers.



UPPER CHASSIS- BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA USE	TYPE	ITEM No	USE	TYPE
V1	1st Video IF Amp.	3BZ6	V7	Audio Output	12CU5/12C5
V2	2nd Video IF Amp.	3BZ6	V8	Sync Phase Inv.-Vert.Mult	6CG7
V3	3rd Video IF Amp.	3CB6	V9	Vert. Mult.-Vert. Output	12DT5
V4	Video Output-Sound IF Amp	6AW8A	V10	Horiz. Mult.	6CG7
V5	AGC Keying-Sync Sep.- Noise Inverter	3BU8	V11	Horiz. Output	12DQ6A
V6	Audio Detector	3DT6	V12	Damper	12AX4GTA
			V13	HV Rect.	1J3

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: CORONADO Part No	GENERAL ELECTRIC Part No.	RCA Part No.	RAYTHEON Part No.	SYLVANIA Part No.	NOTES
V14	17DTP4				17DTP4 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: CORONADO Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No	PYRAMID Part No	SPRAGUE Part No.	NOTES
C1	140	200	EC-84	AFHH-37-35	XAO366	FP131	TMS-34	TVL-1540	Note 1
C2	140	300	EC-119	AFHH-37-25	XAO355	FP131	TMS-42	TVL-1584	Note 2
C3 A	▲100	300	EC-130	AFHH-100-	D0044	FP434.3	TMQ-159	TVL-4711	Note 2
B	▲60	200		20	BR1005				
C	▲100	50							
C4	40	200	EC-113	PRS1580	BR4025	TC58	TD-40-350	TVA-1511	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ELMENCO Part No.	MALLORY Part No.	SPRAGUE Part No.
C5	10000		BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-B10
C6	1.0 100V		P388N-1.0		CUB23W1		GEM-21	2TM-M1
C7	.01 1800V	(.05mfd)*	P1884CM-01	DD16-103	CUB16S	16DP-3-103	GEM-1611	MB-S3
C8	1000 10%		DI-1000	DD-102	1R5D1	CCD-102	GP210	10TS-D10
C9	820	Note 1	DE-820	DD-821	BYA10T82	CCD-821	B-382	5GA-T82
C10	820		DE-820	DD-821	BYA10T82	CCD-821	B-382	5GA-T82
C11	820		DE-820	DD-821	BYA10T82	CCD-821	B-382	5GA-T82
C12	1.0 100V		P388N-1.0		CUB23W1		GEM-21	2TM-M1
C13	820		DE-820	DD-821	BYA10T82	CCD-821	B-382	5GA-T82
C14	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C15	820		DE-820	DD-821	BYA10T82	CCD-821	B-382	5GA-T82
C16	560		DE-560	DD-561	L10T56	CCD-561	B-356	5GA-T56
C17	5000		BPD-005	DD-503	BYA10D5	CCD-503	B-350	5HK-D50
C18	3.3 10%		NPO-SI 3.3	TCZ-3R3	C10Y33C	CCTO-3R3	CNO-533	10TCC-Y33
C19	6.8 10%		NPO-DI 6.8	DTZ-6R8	C10Y68C	CCTO-6R8	CNO-568	10TCC-Y68
C20	.1 600V		P388N-1	DF-104	CUB63P1	6DP-4-104	GEM-601	6TM-P1
C21	5000		BPD-005	DD-503	BYA10D5	CCD-503	B-350	5HK-D50
C22	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	
C23	.022 600V		P868N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C24	10000		BPD-01	DD-103	BYA10B2	CCD-103	B-110	5HK-B10
C25	1000 2000V		HVD-30-1000	DD30-102	HVB20D1	VCM-35-102	2HV-210	BL-D10
C26	47 10%		NPO-SI 47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C27	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNO-547	10TCC-Y47
C28	1000		BPD-001	DD-103	BYA10D1	CCD-103	B-310	5HK-D10
C29	10000		BPD-01	DD-103	BYA10D1	CCD-103	B-110	5HK-S10
C30	100 10%		DE-100	DD-101	L10T1	CCD-101	GP-310	10TS-T10
C31	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C32	1000	(1500mmf)*	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C33	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	150		BPD-00015	DD-151	L10T15	CCD-151	B-315	5GA-T15
C38	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C39	1000 10%		DI-1000	DD-102	1R5D1	CCD-102	GP210	10TS-D10
C40	470 10%		DE-470	DD-471	1R5T47	CCD-471	GP247	10TS-T47
C41	1000 10%		DI-1000	DD-102	1R5D1	CCD-102	GP210	10TS-D10
C42	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C43	1000 2000V		HVD-30-1000	DD30-102	HVB20D1	VCM-35-102	2HV-210	BL-D10
C44	.047 600V 10%		V84C6S47-10%		P868S47	6DP-3-473	GEM-1615	6TM-S47
C45	.1 600V		P668N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C46	.047 600V		P668N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C47	.047 600V		P668N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C48	.01 600V		P668N-01	DD-103	CUB6S1	6DP-2-103	GEM-611	6TM-S1
C49	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-274	5HK-D47
C50	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C51	3900 10%		1464-0039		1R5D39	CM-20B-392K	MCB463	MS-239
C52	680 10%		1468-00068	DD-681	1R5T68	CM-20B-681K	MCJ349	MS-368
C53	680 10%		1468-00068	DD-681	1R5T68	CM-20B-681K	MCJ349	MS-368
C54	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-347	5HK-D47
C55	.047 600V		P668N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C56	.027 1000V		P1084CM-027	DD16-302	CUB10D3	16DP-2-303	GEM-1013	10TM-S3
C57	.047 1000V		P1088N-047		CUB10S47	16DP-5-473	GEM-10147	10TM-S47
C58	330 2000V N1500 10%	#CC-119				**		
C59	330 2000V N1500 10%	#CC-119				**		
C60	120 2000V N750 5%					**		
C61	1000 1000V		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C62	1000 1000V		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C63	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C64	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C65	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-350	5HK-D50
C66	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-350	5HK-D50
C67	.1 600V 10%		V84C6P1-10%		P868P1	6DP-4-104		6TM-P1

* Alternate value. #Coronado Part Number. Note 1. Not used in some versions.
** Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: CORONADO Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS-IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	500K	½	VC-120				PP55A	Volume
B	Switch						Not Req.	Push-Pull Off-On
R2A	1000Ω	½	VC-186	F1-5		↑ QJ-1129	■UE4067	Contrast
B	5000Ω	½		R2-19				Vert. Lin.

CONTROLS (cont)

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: CORONADO Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	CTS-IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R3A	200K	½	VC-194	F1-33		♦		Vert Hold
B	2.5meg	½		R2-77				Vert. Size
R4A	100K	½	VC-84	BX-40	B47-100K-B	B11-128	PTA15L	AGC
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	100K	½	VC-84	BX-40	B47-100K-B	B11-128	PTA15L	Brightness
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

† "Concentrikit" Equivalent: K-15 Kit with Base Elements & Shafts: B17-108, P17-028 (Panel) B11-114, R15-005 (Rear)

♦ "Concentrikit" Equivalent: K-15 Kit with Base Elements & Shafts: B11-129, P17-028 (Panel) (Not available as a factory assembled unit) B11-339, R15-006 (Rear)

■ "STA-LOC" Equivalent: FA15R, RU15L, OS875A, 18437.

▲ "STA-LOC" Equivalent: FA25L, RU25L, OS875A, 15437.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R6	330Ω	
R7	10meg	
R8	2meg 5%	
R9	4700Ω	
R10	1000Ω	
R11	150K	
R12	2.2meg	
R13	39K	
R14	470Ω	
R15	220K	
R16	47Ω	
R17	22K	
R18	220K	
R19	4700Ω	
R20	470Ω	
R21	3300Ω	
R22	68Ω	
R23	18K	
R24	470Ω	
R25	150Ω	
R26	8800Ω	
R27	100Ω	
R28	47K	
R29	1200Ω	
R30	33Ω 5%	Note 1
R31	180Ω	
R32	7500Ω 5W	#WR-48
R33	47K	
R34	39K	
R35	39K	

ITEM No.	RATING	REMARKS
R36	56K	
R37	390K	
R38	18K	(15K)*
R39	270K	
R40	82K	
R41	8200Ω 1W	
R42	4.7meg	
R43	56K	
R44	100K	
R45	100K	
R46	330K	
R47	100K	
R48	560K	
R49	8200Ω	
R50	680Ω	
R51	1meg 5%	
R52	150Ω	
R53	1meg 5%	
R54	2200Ω 2W	
R55	4.7meg	
R56	6800Ω	
R57	5600Ω	
R58	2200Ω	
R59	2.2meg	
R60	3300Ω	
R61	220K	
R62	820K 5%	
R63	56K	
R64	2.2meg	
R65	220K	

ITEM No.	RATING	REMARKS
R66	100Ω	
R67	390Ω 1W	
R68	39K 1W	
R69	39K 5%	
R70	220Ω	
R71	220Ω	
R72	3.9Ω Cold	#IR-284
R73	100K	
R74	100K	
R75	4.7meg	
R76	470K	
R77	22K 3W	
R78	9100Ω 5%	#IR-285
R79	100K	
R80	56K	
R81	15K	
R82	1500Ω 5%	
R83	100Ω	
R84	470K	(1meg)*
R85	12K 3W	
R86	150K	
R87	470K	
R88	4700Ω	
R89	1.2Ω 1W	
R90		#F-8
R91	27Ω 10W	#WR-26
R92	5Ω 5W	#WR-42
R93	5.5Ω	#F-8-1
R94	470K	

#Coronado Part Number. * Alternate value. Note 1. Not used in some versions.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: CORONADO Part No.	Gramer Part No.	Meissner Part No.	Merit Part No.	Miller Part No.	Ram Part No.	NOTES
L1	Ant. Matching Coil	L-157						
L2	1st Video IF	L-150				6231 *		
L3A	2nd Video IF	L-103		17-5002	17-5002			
B	4.25MC Trap		17-5002					
L4A	3rd Video IF	L-155		17-5003	17-5003	TV-128	6233	
B	47.25MC Trap							
L5	4th Video IF	L-152						
L6	RF Choke	L-160	18-1005	19-1005	BC-566	4612		10.4uh
L7	RF Choke	L-158						27.5uh
L8A	Sound Take-Off	L-154						
B	4.5MC Trap							
L9	Series Peaking Coil	L-162						②
L10	Shunt Peaking Coil	L-163						③
L11	2nd Sound IF	L-167						
L12	Quadrature Coil	L-110A	17-1031 ▲	17-1031 ▲		1481 ▲	SD-5 ▲	

* Disregard secondary winding.
▲ Parallel with 100K resistor.
① Wound on 4700Ω resistor.
② Wound on 10K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: CORONADO Part No.	Halldorson Part No.	Merit Part No.	Miller Part No.	Ram Part No.	Thordarson Part No.	NOTES
L13	97Ω		L-156	HS-5 *	TV-163 *	6210 *	H-102 *	HS-5 *	Horiz. Stabilizer * Enlarge mounting hole.

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (0 CURRENT 1000 ^(-1))	REPLACEMENT DATA: CORONADO Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No
L14	.240A	49Ω	1 Hy.	FC-53						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: CORONADO Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Rogers Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No
T1	Vert. Output	TR-50B	26S14		V319			26S14	A-140X
T2	Yoke-Horiz. (18.7MH) (10°)-Vert. (3.5MH) Rear Cover & Centering Device Yoke Clamp	L-149B	Y-52 ①②③		Y-110 ①②④		DY-27A ①②③	Y-52 ①②③	Y-60 & NW-25 ②③ YC-110
		MP-165							
		ST-58							
T3	Horiz. Output	TR-51A	FLY-137*	HVO-152 *	X162 *		EFR172 *	HO-304 *	FLY-137 *	D-151R *

① Use original rear cover, centering device, and yoke clamp.
② Use original yoke plug.
③ Connect as original.
④ Connect yoke terminal #2 to yoke plug pin #3, yoke #1 and #3 to plug #4, yoke #10 to plug #5.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	5	5	5	5	5	5	5	5 & 4
	6	6	6	6	4	6	6	6
	7	7	7	7	2	7	7	7
	8	8	8	8	1	8	8	8
	2	1	2	2	7	2	1	2
	1	2	1	1	8	1	2	1
Special Note					5			

5 Remove one turn from filament winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: CORONADO Part No.	Halldorson Part No.	Merit Part No.	Ram Part No.	Stancor Part No.	Thordarson Part No.	Triad Part No.	NOTES
T4	2600Ω	3-4Ω	AT-52	24S83	A-3035	AU-605	A-3322	24S83	S-12X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V C IMP	REPLACEMENT DATA: CORONADO Part No	QUAM Part No	NOTES
SP1	4"	PM	3-4Ω	SPK-49	4A07	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO Part No	REPLACEMENT DATA
K1	Vert. Integrator	470mmf, 10000mmf, 15K, 15K	CC-130	

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: CORONADO Part No.	INTERNATIONAL Part No.	ITT Part No.	SARKES TARZIAN Part No.	SYLVANIA Part No.	NOTES
M1	.240A	SR-14 ①	SD600 ①	HF504 ①	40K ①	SR500 ③	① Silicon Type.
M2	.240A	SR-14 ①	SD600 ①	HF504 ①	40K ①	SR500 ③	② Dual Sel. Diode
M3		SR-15 ②	SD91 ② ③	H1615 ③			③ Two required.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: CORONADO Part No.	CBS Part No.	RAYTHEON Part No.	SYLVANIA Part No.	NOTES
M4	1N87	SC-22	1N87	1N87	1N90	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO Part No.	NOTES
M5	Tuner	TA-56	VHF with UHF provisions
	Tuner	TA-49	UHF
M6	Antenna	L-168	Telescopic (JFD Repl. TA38S)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

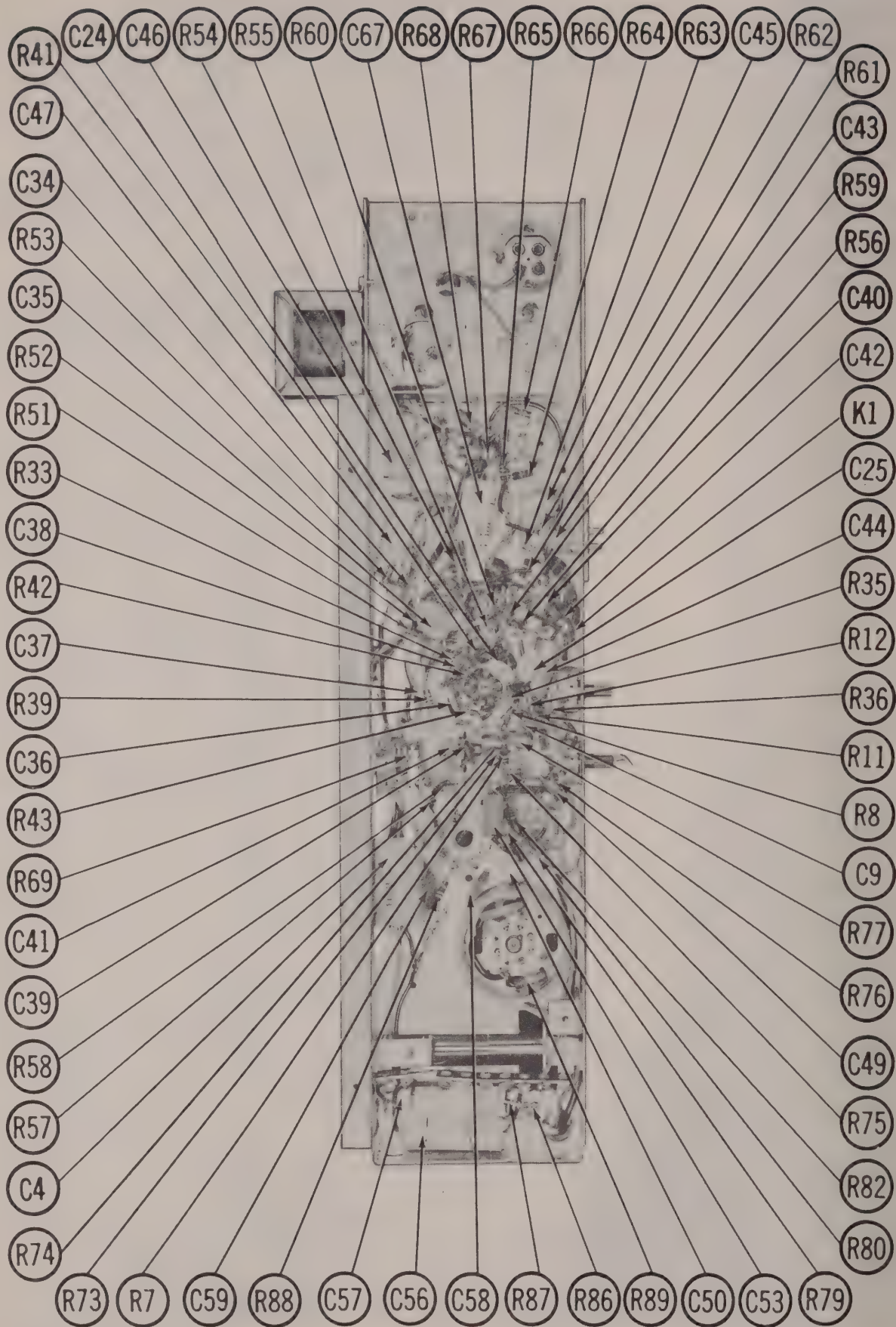
NAME	PART NO.	DESCRIPTION
Safety Glass	MP-139	
Knob	K-349	VHF Channel Selector
Knob	K-369	UHF Channel Selector
Knob	K-350	Fine Tuning
Knob	K-370	UHF Channel Indicator
Knob	K-356	Off-On-Volume
Knob	K-364	Contrast, Vert. Hold
Handle	CH-116	
Cabinet Front	MP-140	
Cabinet Back	MP-141	

WIRING DATA

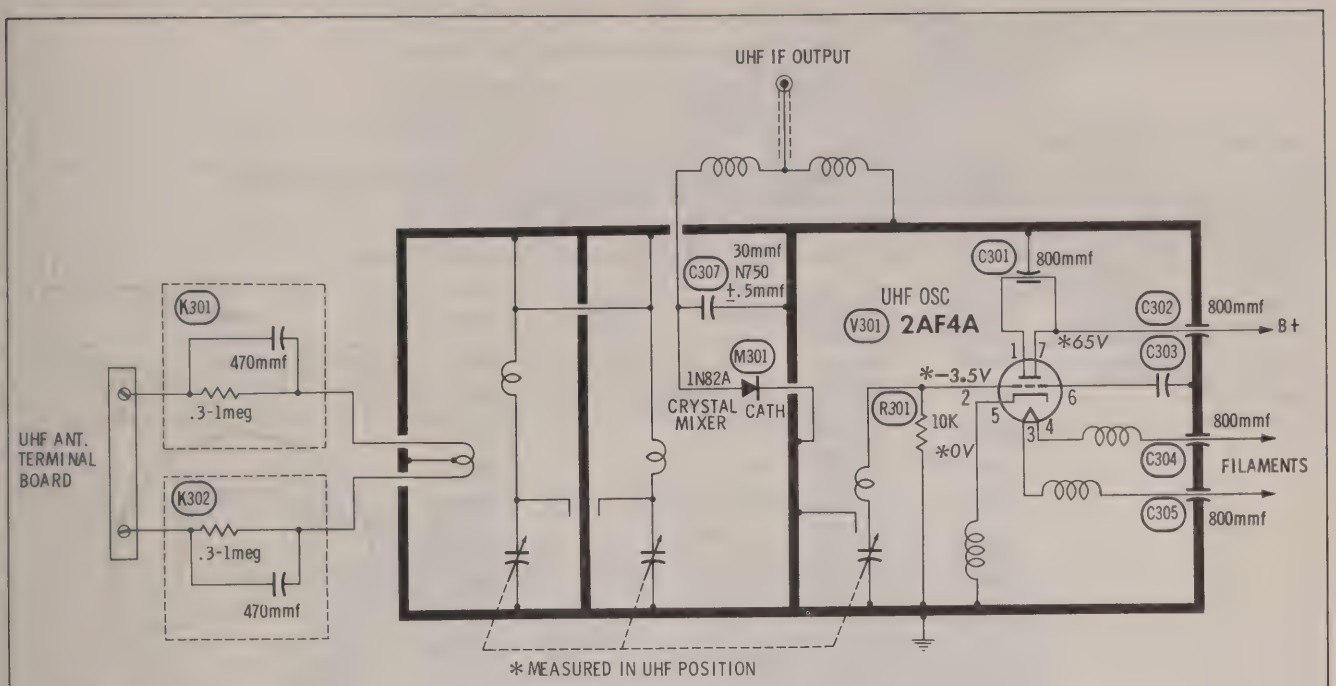
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8484 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

CORONADO MODEL TV17-9405A

FOLDER 1



LOWER CHASSIS - BOTTOM VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TUBES

• CBS •		GENERAL ELECTRIC •		RAYTHEON •		SYLVANIA •	
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE		
V301	UHF Osc.	2AF4A					

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C301	800		EF-001	MFT-1000		CCF-102	CT280A	
C302	800		EF-001	MFT-1000		CCF-102	CT280A	
C303								
C304	800		EF-001	MFT-1000		CCF-102	CT280A	
C305	800		EF-001	MFT-1000		CCF-102	CT280A	
C306	1000		BPD-001	DD-102	BYA10D1M	CCD-102	GP210	
C307	30 N750 ±.5mmf							10TCU-Q30

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		CORONADO PART No.	NOTES
	OHMS	WATT		
R301	10K			

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CORONADO PART No.	REPLACEMENT DATA	
K301	UHF Antenna Isolation	470mmf, .3-1meg		Centralab	RC-471
				Sprague	AC1-1
K302	UHF Antenna Isolation	470mmf, .3-1meg		Centralab	RC-471
				Sprague	AC1-1

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CORONADO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M301	1N82A		1N82A	1N82A	1N82A	UHF Mixer (Clip-in)

TUNER ALIGNMENT INSTRUCTIONS

TA-56

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

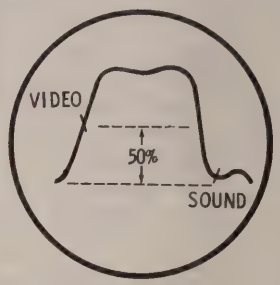


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

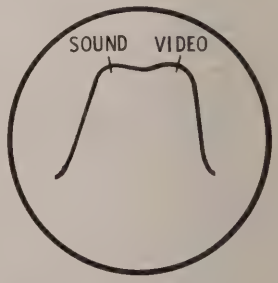
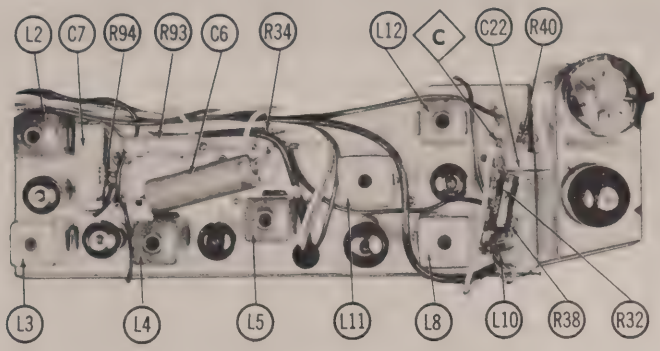
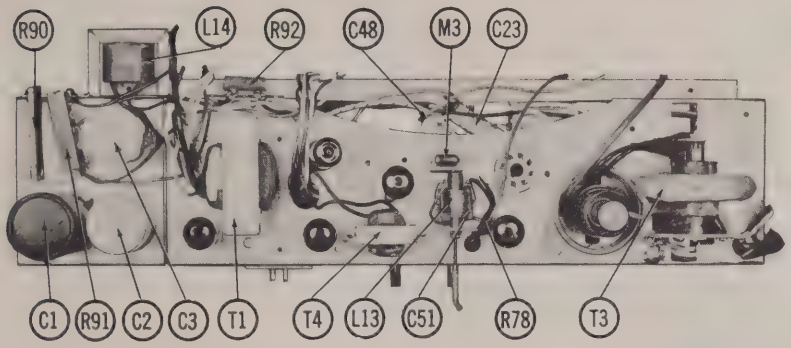


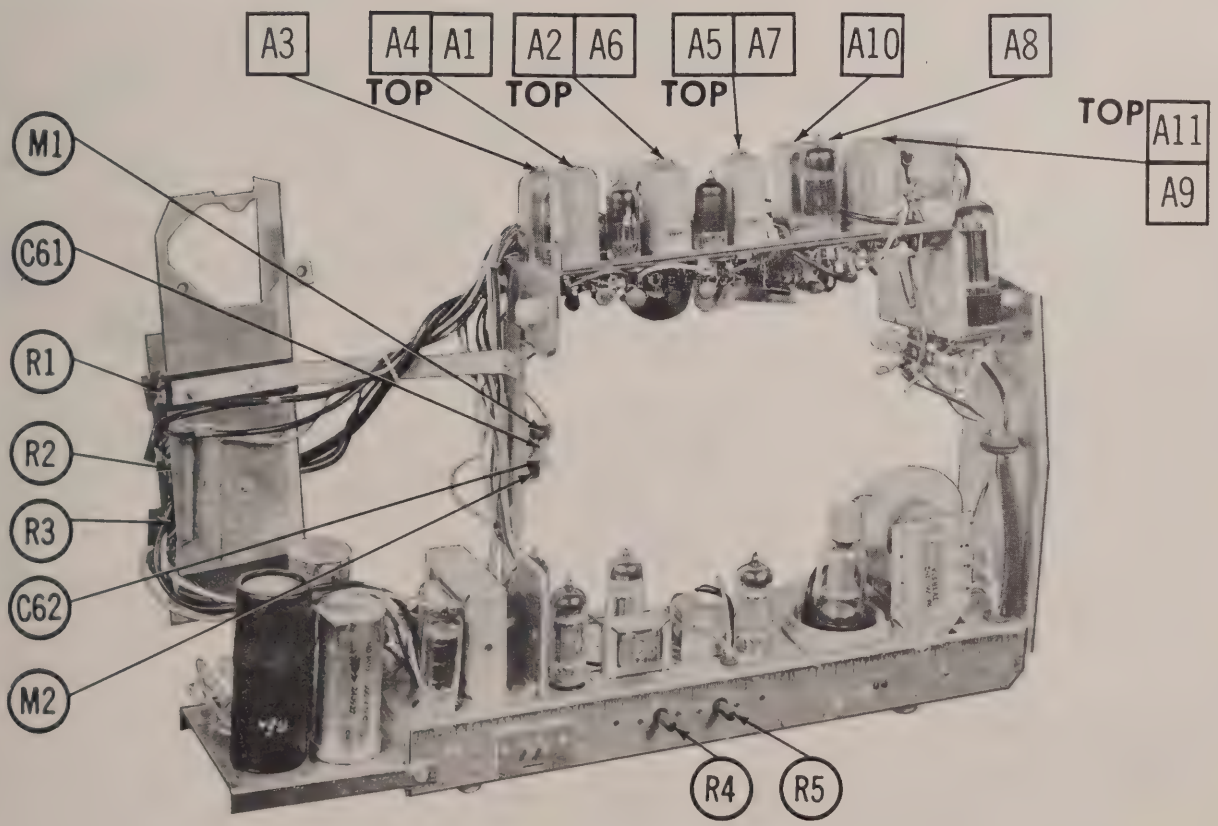
FIG. 202



UPPER CHASSIS - TOP VIEW



LOWER CHASSIS - TOP VIEW



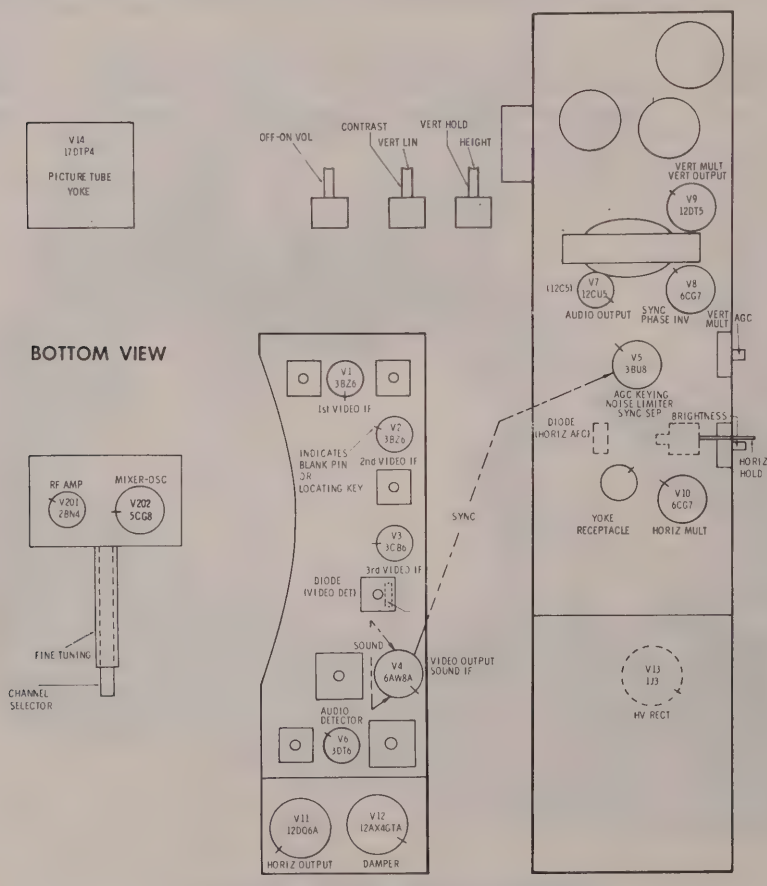
CHASSIS - REAR VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	140K	47Ω	6.5Ω	6Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	3BZ6	▲ 22K	▲ 68Ω	6Ω	5.5Ω	† 470Ω	† 470Ω	120K		
V3	3CB6	.1Ω	150Ω	5.5Ω	5Ω	■ 470Ω	■ 470Ω	0Ω		
V4	6AW8A	0Ω	100K	■ 100K	3.5Ω	5Ω	● 45Ω	6900Ω	■ 1200Ω	† 7500Ω
V5	3BU8	■ 0Ω	† 8200Ω	2.3meg	14Ω	13Ω	† 35K	† 390K	† 40K	■ 4.7meg
V6	3DT6	18.5Ω	680Ω	3.5Ω	2.5Ω	† 330K	■ 8200Ω	560K		
V7	12CU5/ 12C5	¶	550K	13Ω	10.5Ω	550K	† 220Ω	† 450Ω		
V8	6CG7	● † 1.2meg	220K	● 110K	9Ω	10.5Ω	† 12K	2meg	3300Ω	0Ω
V9	12DT5	† 100Ω	NC	2.2meg	9Ω	6.5Ω	2.2meg	● 650Ω	NC	† 375Ω
V10	6CG7	† 9200Ω	2.8meg	1500Ω	14Ω	15.5Ω	† 100K	56K	1500Ω	0Ω
V11	12DQ6A	NC	15.5Ω	NC	† 12K	470K	TP	18Ω	0Ω	TOP CAP ‡9Ω
V12	12AX4GTA	NC	NC	¶ 700K	NC	† 0Ω	NC	21Ω	18Ω	
V13	1J3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡470Ω
V14	17DTP4	2.5Ω	39K	‡150K	† 0Ω	NC	39K	● 120K	1.5Ω	
V201	2BN4	0Ω	3.7meg	0Ω	.5Ω	■ 1300Ω	0Ω	3.7meg		
V202	5CG8	10K	■ 5900Ω	0Ω	1.5Ω	.5Ω	■ 1300Ω	■ 10K	0Ω	320K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
■ MEASURED FROM 150V SOURCE.
† MEASURED FROM 270V SOURCE
‡ MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

PHOTOFACT® Folder with CIRCUITRACE®

PHILCO MODELS H2010BL, H2010L (Ch. 10AT10)

PHILCO MODELS H2010BL, H2010L (Ch. 10AT10)

MODEL H2010L (SAFARI)
CHASSIS 10AT10

PHILCO MODELS H2010BL, H2010L (Ch. 10AT10)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 475 FOLDER 2

PHOTOFACT® Folder with CIRCUITRACE®

PHILCO MODELS H2010BL, H2010L (Ch. 10AT10)

PHILCO MODELS H2010BL, H2010L (Ch. 10AT10)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove all external push-on type knobs except the Elapsed-Time knob.
2. Remove 4 metal screws on bottom holding cabinet stand and lower section of cabinet to the chassis.
3. Remove 2 metal screws at rear and one in front holding top plastic housing. Remove antenna connection from tuner. Remove metal screw holding ground strap. Remove top plastic housing.
4. Remove 2 metal screws at rear and one at front of optical system. Remove optical unit.
5. Remove 5 metal screws holding battery mounting bracket. Remove bracket.
6. Remove chassis.

PICTURE TUBE REMOVAL

1. Remove chassis.
2. Remove picture tube socket, sleeve and magnet assembly, and HV lead.
3. Slide the picture tube out the top of chassis.

MODEL H2010L (SAFARI)
CHASSIS 10AT10

TRADE NAME	Philco Models H2010BL, H2010L (Safari) (Ch. 10AT10)
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.
TYPE SET	Portable Television Receiver
TRANSISTORS	Twenty-One
TUBES	Three
POWER SUPPLY	105-120 Volts AC, 60 Cycles or Battery, 7.5 Volts
RATING	11 Watts, .13 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Follow steps 1 thru 4 of "Disassembly Instructions". Remove 4 screws holding upper and lower retainers on optical unit. Remove beam splitter for cleaning.

FUSE

One fuse is used for low voltage power supply protection. (For location, see "Transistor & Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of a Range switch. (For location, see "Transistor & Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet-Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Auxiliary Horizontal Hold. (For location, see "Transistor & Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Discriminator secondary (A12) located on top of chassis.

CENTERING

Centering is accomplished by 2 magnetic rings and by the beam aligning magnet, located behind yoke on the neck of the picture tube.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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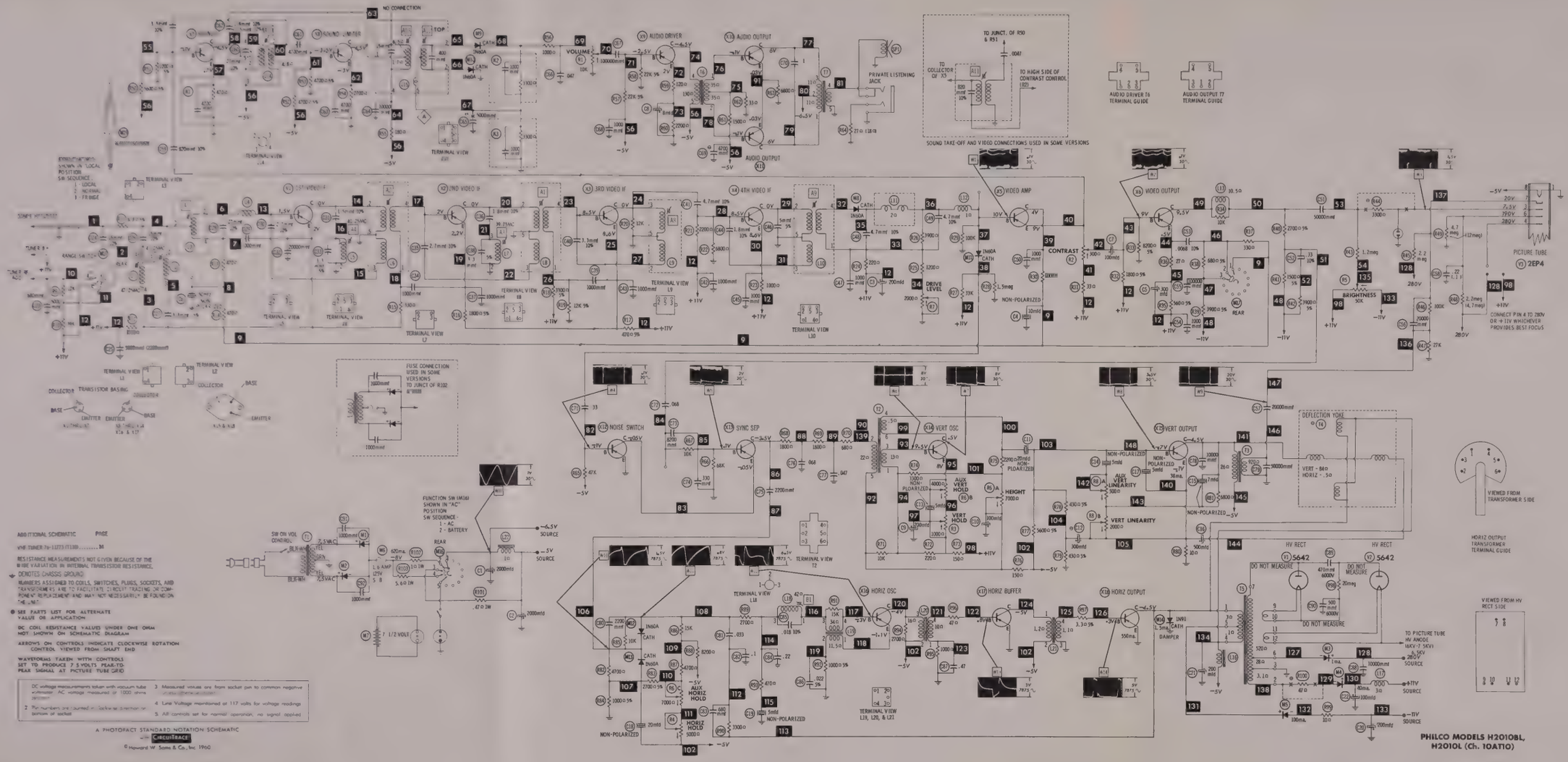
JA723

SET 475 FOLDER 2


PHILCO MODELS H2010BL, H2010L (Ch. 10AT10)
SOUND TAKE-OFF AND VIDEO CONNECTIONS USED IN SOME VERSIONS
AUDIO DRIVER T6 TERMINAL GUIDE
AUDIO OUTPUT T7 TERMINAL GUIDE
PRIVATE LISTENING JACK
VOLUME
AUDIO DRIVER
AUDIO OUTPUT
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
4TH VIDEO IF
VIDEO AMP
VIDEO OUTPUT
CONTRAST
BRIGHTNESS
PICTURE TUBE
2EP4
NOISE SWITCH
SYNC SEP
VERT OSC
VERT OUTPUT
HEIGHT
VERT LINEARITY
AUX VERT LINEARITY
AUX VERT HOLD
VERT HOLD
DEFLECTION YOKE
HORIZ OSC
HORIZ BUFFER
HORIZ OUTPUT
AUX HORIZ HOLD
HORIZ HOLD
DAMPER
HV RECT
5642
DO NOT MEASURE
TO PICTURE TUBE HV ANODE
FUNCTION SW (M16)
SHOWN IN "AC" POSITION
SW SEQUENCE -
1 - AC
2 - BATTERY
SW ON VOL CONTROL
REAR
L & AMP
7 1/2 VOLT
TERMINAL VIEW
TRANSISTOR BASING
FUSE CONNECTION USED IN SOME VERSIONS TO JUNCT OF R102 & W888
TO JUNCT. OF R50 & R51
TO COLLECTOR OF X5
TO HIGH SIDE OF CONTRAST CONTROL
VIEWED FROM TRANSFORMER SIDE
HORIZ OUTPUT TRANSFORMER TERMINAL GUIDE
VIEWED FROM HV RECT SIDE
ADDITIONAL SCHEMATIC PAGE
VHF TUNER 76-1273 (T110) 1
RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON A "NO."
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 7.5 VOLTS PEAK-TO PEAK SIGNAL AT PICTURE TUBE GRID
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket.
3 Measured values are from socket pin to common negative.
4 Line Voltage maintained at 117 volts for voltage readings.
5 All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE
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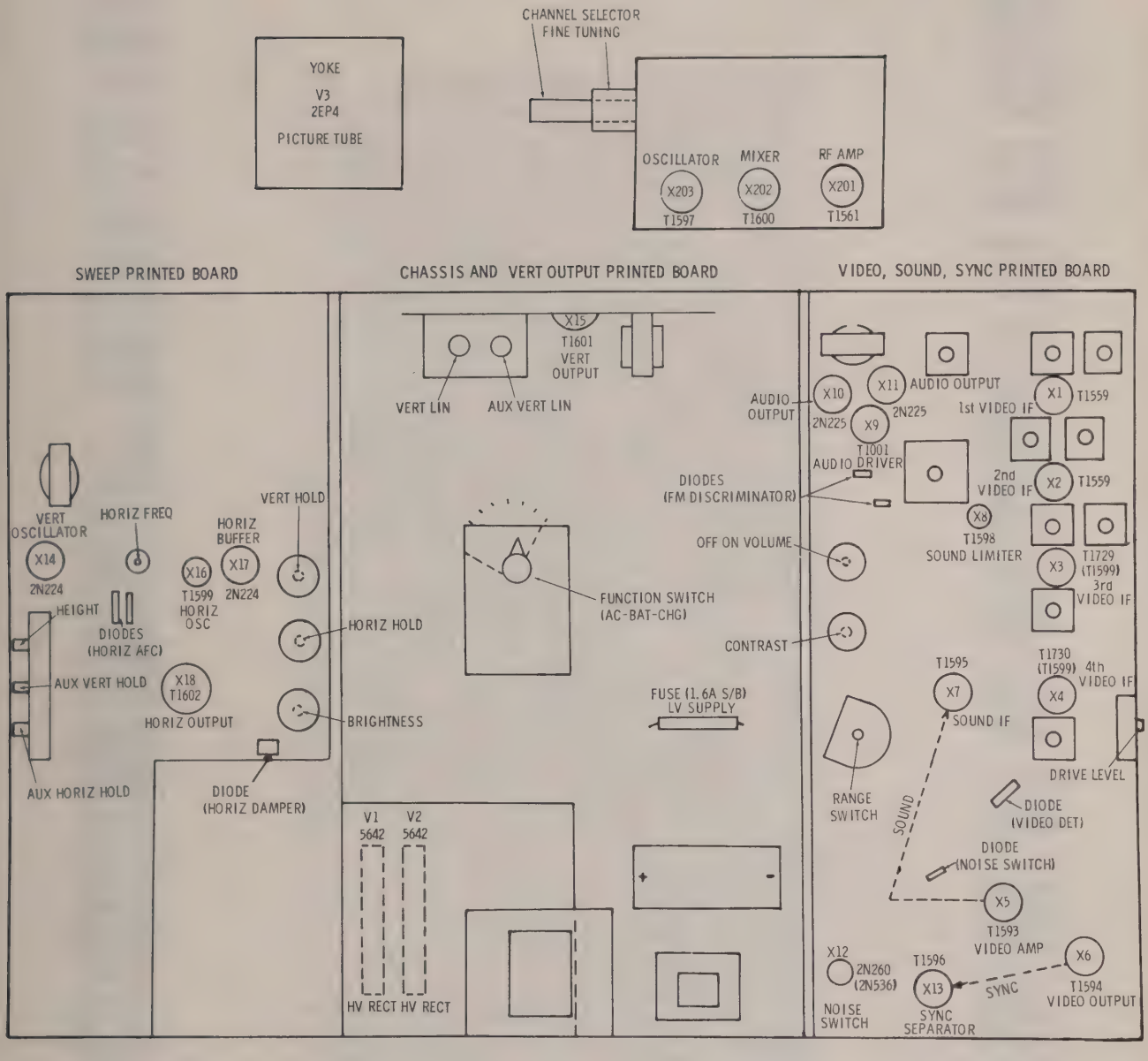
TRANSISTOR AND TUBE
PLACEMENT CHART



TRANSISTOR AND TUBE
FAILURE CHECK CHART

The following chart lists tubes and transistors whose failures are most likely to produce indicated symptoms. Refer to Transistor & Tube Placement Chart for location of tubes and transistors.

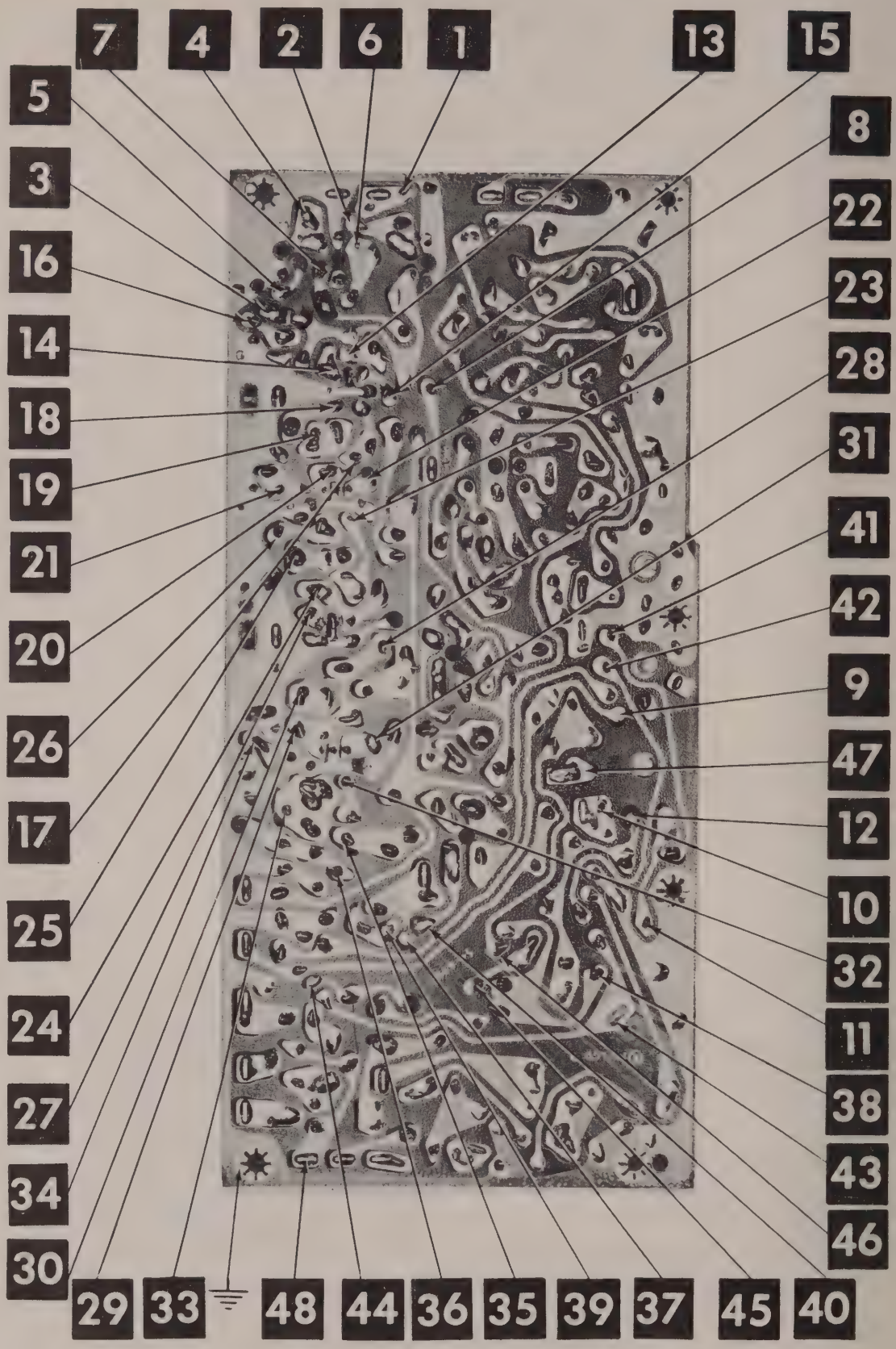
POWER SUPPLY FAILURE
No raster, no sound Fuse (1.6A), Rect. (B+)

SWEEP FAILURE
No raster, has sound X16, X17, X18, Diode (Damper), V1, V2, V3
No vertical deflection X14, X15
Poor vert. linearity or foldover X14, X15
Poor horiz. linearity or foldover X16, X19, X18, Diode (Damper)
Narrow picture Rect. (B+), X16, X17, X18, Diode (Damper)
Vert. off freq. X14
Horiz. off freq. X16

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster X1, X2, X3, X4, Diode (Video Det), X5
No pic, no sound, has snow X201, X202, X203, X1
No pic, has sound, has raster X6, V3
Has pic, no sound X7, X8, X9, X10, X11

SYNC FAILURE
No vert. sync X13
No horiz. sync X13
No vert. or horiz. sync X13

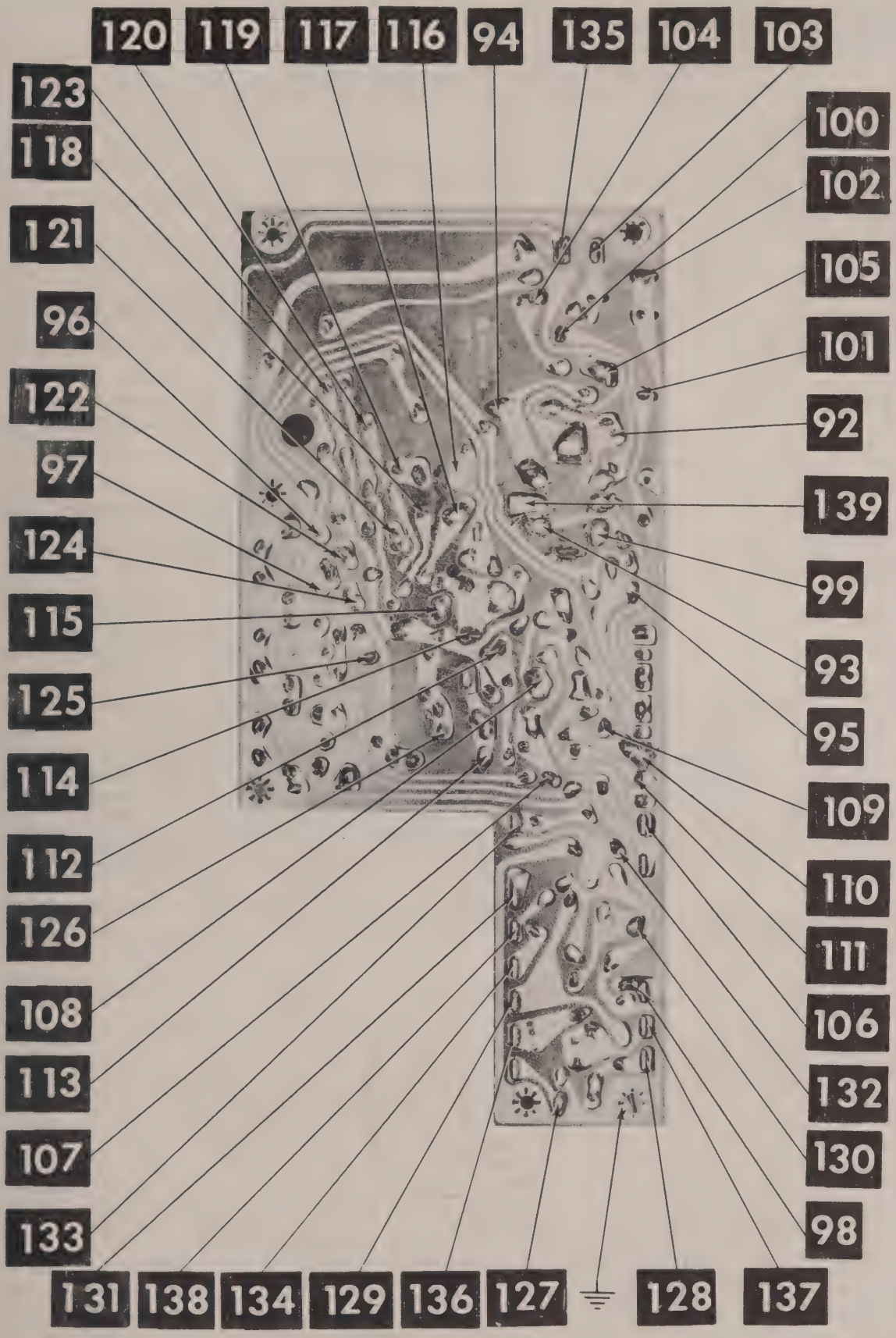
CircuiTrace Numbers 1 thru 48



A Howard W. Sams CIRCUITRACE* Photo

VIDEO, SOUND, SYNC PRINTED BOARD

CircuiTrace Numbers 92 thru 139



A Howard W. Sams CIRCUITRACE® Photo

SWEEP PRINTED BOARD

PHILCO MODELS H2010BL, H2010L (Ch. 10AT10)

FOLDER 2

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Set Range switch to Normal and Drive Level control (R7) to mid-position.
Suggested Alignment Tools: A1 thru A9.....GENERAL CEMENT # 5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A10, A12, A13.....GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect a variable bias supply between TP-3 and chassis. The required bias will range from -1.5 to +3 volts. During alignment set bias to +.2 volts unless otherwise stated.
Adjust A1 and A2 so that top of inner core is flush with top of outer core.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Unplug IF cable from tuner and connect generator across cable plug.	Not used	39.75MC (400∿ 30% AM Mod)		Vert. Amp. to TP-4. Low side to chassis.	A3	Adjust for MINIMUM scope indication. Raise bias at TP-3 in positive direction if necessary to obtain usable scope deflection being careful not to overload.
2.	"	"	41.25MC		"	A4, A5	"
3.	"	"	47.25MC		"	A6	"
4.	"	"	45.3MC		"	A7	Adjust for maximum scope indication.
5.	"	"	45.0MC		"	A8	"
6.	"	"	44.0MC		"	A9	"
7.	Across antenna input jack. Reconnect IF cable.	"	65.75MC	4	"	Fine Tuning	Adjust for MINIMUM scope indication. DO NOT disturb for balance of alignment.
8.	"	"	44.7MC	"	"	Mixer Collector Coil	Adjust for maximum scope indication. Use peak nearest top of coil.
9.	"	69MC (10MC Swp)	42.5MC 45.75MC	"	"		Check for response curve similar to Fig. 1. If necessary, retouch Mixer Collector coil to correct high frequency side of curve, A5 for low frequency side and A7 for correct tilt.

SOUND IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to TP-3. Positive to chassis.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	High side thru 10K to TP-4. Low side to chassis.	4.5MC (400∿ 30% AM Mod)	Any non-interfering	DC probe to point (A). Common to chassis.	A10, A11	Adjust for maximum deflection. (A11 not used in some sets).
11.	"	"	"	"	A12, A13	Preset for maximum core separation. Adjust for maximum deflection using first peak turning in. Adjust A13 for maximum deflection using first peak turning in.
12.	Disconnect test equipment and tune in a weak air signal. Retouch A12 for MINIMUM noise or distortion.					

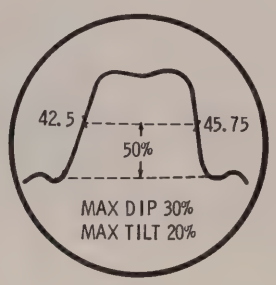


FIG.1

TUNER ALIGNMENT INSTRUCTIONS

76–11773 (T110)

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Suggested Alignment tools: A201, A208, A210, A212, A219 thru A222 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A217, A218 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

OSCILLATOR ALIGNMENT

Set the Fine Tuning to the center of its range.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Coils not containing slugs are adjusted by bending toward or away from switch wafer.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Across antenna terminals.	209.75MC (400∿ 30% AM Mod)	13	Across Video Det. load	A201	Adjust for MINIMUM scope indication.
2.	"	"	203.75MC	12	"	A202	"
3.	"	"	197.75MC	11	"	A203	"
4.	"	"	191.75MC	10	"	A204	"
5.	"	"	185.75MC	9	"	A205	"
6.	"	"	179.75MC	8	"	A206	"
7.	"	"	173.75MC	7	"	A207	"
8.	"	"	81.75MC	6	"	A208	"
9.	"	"	75.75MC	5	"	A209	"
10.	"	"	65.75MC	4	"	A210	"
11.	"	"	59.75MC	3	"	A211	"
12.	"	"	53.75MC	2	"	A212	"

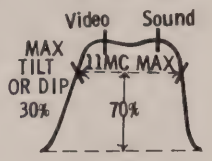


FIG. 201

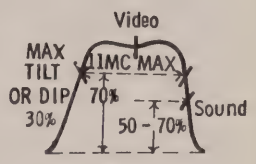


FIG. 202

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect a 330Ω resistor from Collector of Mixer to chassis. Replace cover.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru special Detector jig (Fig. 204) to point ⓓ. Low side to chassis.	A213	Adjust for maximum gain and symmetry of response similar to Fig. 201. with markers as shown.
14.	"	"	"	213MC	"	"	A214, A215	If necessary, adjust by expanding or compressing coil turns for maximum symmetrical response centered about 113MC. marker.
15.	"	"	"	210MC 216MC	"	"	A216	Adjust spacing between "gimmick" wires (A216) for proper bandwidth as in Fig. 201
16.	"	"	177MC	177MC	7	"	A217, A218	Adjust to obtain correct tilt on top of curve as in Fig. 203 to compensate for the tuning effect of channel 13. Repeat step 14, retouch only SLIGHTLY. Repeat step 16.
17	"	"	85MC	87.75MC	6	"	A219, A220	Adjust for approximate correct bandwidth with sound carrier between 50 and 70% as in Fig. 202.
18.	"	"	"	83.25MC	"	"	A221	Adjust for maximum gain at 83.25MC marker. Repeat step 17 adjust A219 and A220 only SLIGHTLY.
19.	"	"	Not used	43.5MC (400∿ 30% AM Mod)	4	Across Video Det. load	A222	Remove 330Ω resistor. Adjust for MINIMUM 400∿ indication on scope.

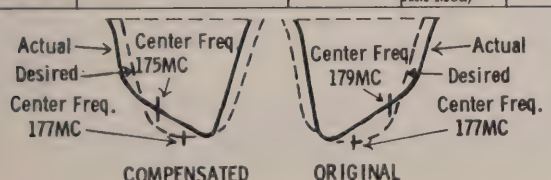


FIG. 203

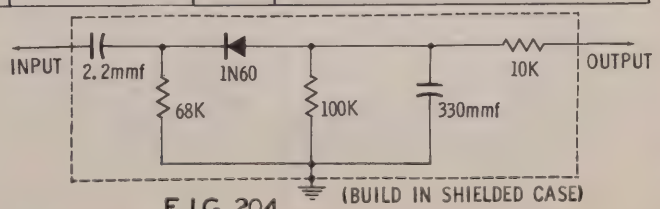


FIG. 204

TUNER PARTS LIST AND DESCRIPTIONS

76-11773(T110)

TRANSISTORS

ITEM No.	PHILCO PART NO.	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X201	34-6000-25	RF Amp. (T1561)					PNP
X202	34-6000-26	Mixer (T1600)					PNP
X203	34-6000-27	Oscillator (T1597)					PNP

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	100 N2200					*		
C202	8		NPO-DI 8.2		C10V8C			10TCC-V8
C203	15	#30-1268-8						
C204	.5-3			829-3		CV-1	CT565	
C205	20	#30-1268-17						
C206	3.9	#30-1268-15						
C207	1-3.8			829-4		CV-2	CT551	
C208	1000		EF-001	MFT-1000		CCF-102	CT280A	
C209	.82 10%	#30-1221-10						
C210	1-3.8			829-4		CV-2	CT551	
C211	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V5
C212	30	#30-1268-9						
C213	15	#30-1268-8						
C214	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	7		NPO-DI 6.8	DTZ-6R8	C10V7C	CCTO-628	CNO-568	10TCC-V68
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1.5 N2200	#30-1224-136				*		
C219	1.8		NPO-SI 2.0		C10V2C			10TCC-V18
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	
C221	27	#30-1268-16						
C222	1000		EF-001	MFT-1000		CCF-102	CT280A	
C223	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
\# Philco part number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R201	12K	
R202	12K	
R203	4700Ω	
R204	1500Ω	

ITEM No.	RATING	REMARKS
R205	39K	
R206	12K	
R207	1200Ω	
R208	1500Ω	(1200Ω) *

ITEM No.	RATING	REMARKS
R209	5600Ω	
R210	10K	(12K)*

* Alternate value.

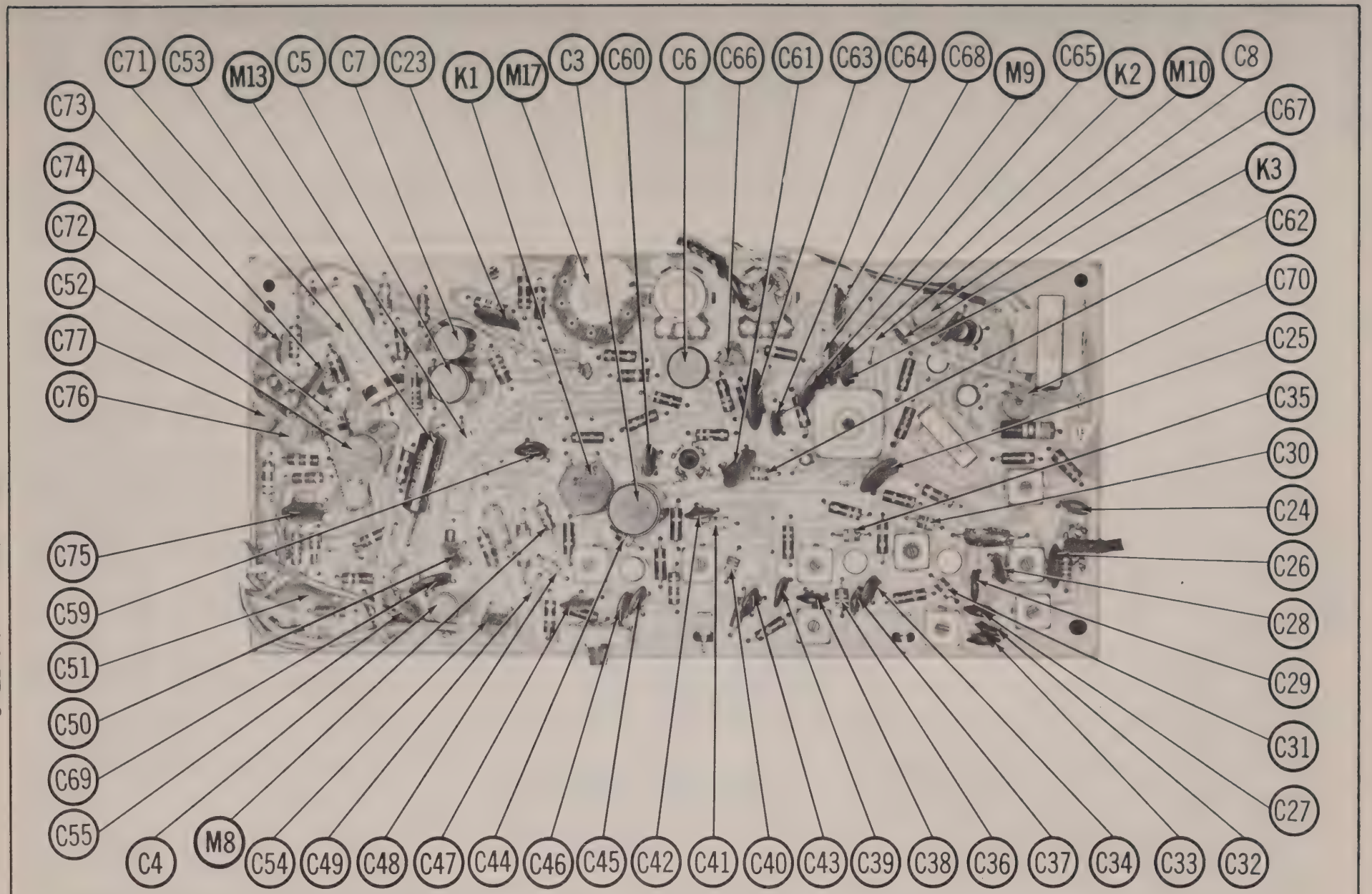
COILS (RF-IF)

ITEM No.	USE	PHILCO PART No.	NOTES
L201	IF Trap Coil	32-4788-2	
L202	Ant. Coil	32-4786-2	Channel 13
L203	RF Choke	32-4785-1	
L204	RF Coil	32-4786-15	Channel 13
L205	Mixer Coil	32-4786-23	Channel 13
L206	IF Trap Coil	32-4786-13	

ITEM No.	USE	PHILCO PART No.	NOTES
L207	RF Choke	32-4786-12	
L208	RF Choke	32-4785-1	
L209	RF Choke	32-4786-14	
L210	Osc. Coil	32-4788-1	Channel 13
L211	Mixer Collector Coil	32-4787	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
	Shaft	54-5579	Fine Tuning
	Switch & Shaft	76-11779	Channel Selector
	Stator, Osc. Fine Tuning	28-13173-4	



VIDEO, SOUND, SYNC PRINTED BOARD - CAPACITOR & MISC IDENT

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	CBS / GENERAL ELECTRIC	TYPE	ITEM No	RAYTHEON / SYLVANIA	TYPE
V1	HV Rect.	5642	V3	HV Rect.	5642

PICTURE TUBE

ITEM No	REPLACEMENT DATA: PHILCO PART No.	GENERAL ELECTRIC PART No.	RCA PART No	RAYTHEON PART No	SYLVANIA PART No	NOTES
V3	21P4					

TRANSISTORS

ITEM No	PHILCO PART NO.	USE	REPLACEMENT DATA: CBS PART No	RCA PART No	RAYTHEON PART No	SYLVANIA PART No	NOTES
X1	34-6000-28	1st Video IF Amp. (T1559)					PNP
X2	34-6000-28	2nd Video IF Amp. (T1559)					PNP
X3		3rd Video IF Amp.(T1729)*					PNP
X4		4th Video IF Amp. (T1730)*					PNP
X5	34-6000-29	Video Amp. (T1593)					PNP
X6	34-6000-30	Video Output (T1594)					PNP
X7	34-6000-31	Sound IF Amp. (T1595)					PNP
X8	34-6000-33	Sound Limiter (T1598)					PNP
X9	34-6001-33	Audio Driver (T1001)			2N362		PNP
X10	34-6001-28	Audio Output (2N225)			2N632		PNP Matched Pair
X11	34-6001-28	Audio Output (2N225)			2N632		PNP
X12		Noise Switch (2N265) *					PNP
X13	34-6000-32	Sync Sep. (T1596)					PNP
X14	34-6001-29	Vert. Osc. (2N224)			2N633		PNP
X15	34-6003-13	Vert. Output (T1602)					PNP
X16	34-6000-34	Horiz. Osc. (T1599)					PNP
X17	34-6001-29	Horiz. Buffer (2N224)			2N633		PNP
X18	34-6003-14	Horiz. Output (T1602)					PNP

* Some versions may use Type T1598 in this application (Part #34-6000-28).
* Some versions may use Type 2N536 in this application (Part #34-6000-28).

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	2000	10	30-2596-5	PRSU47	BR20001			TVAS-1170 *	
C2	2000	10	30-2596-5	PRSU47	BR20001			TVAS-1170 *	
C3	200	20	30-2600-9	BCD20200				VLS-1190 *	
C4	10	20WP	30-2600-17	BCD25010	ECPB508	PET760		VL-1207	
C5	300	5	30-2600-3	SRE6V250	ECPA123			VLS-1078 *	
C6	50	10NP	30-2600-13	BCD10050	ECPA715	PET980		VL-1215	
C7	100	5	30-2600-3	BCD5100	ECPA117			VL-1100	
C8	8	10	30-2600-4	BCD12008	ECPB307	PET340		VL-1126	
C9	200	20	30-2600-9	BCD20200				VLS-1190 *	
C10	100	10	30-2600-5	BCD12100	ECPB317	PET1400		VL-1140	
C11	20	10NP	30-2600-12	NP-PRS7200				VLNS-1112 *	
C12	300	5			ECPA123				Note 1
C13	5	10WP	30-2600-15	BCDNP10005				TVAS-1110 *	
C14	5	10NP	30-2600-15	BCDNP10005				TVAS-1110 *	
C15	7	10NP	32-2600-16	AC-PRS8200				TVAS-1112 *	
C16	300	12	30-2600-7	BCD12500				TVA-1132 *	
C17	5	5NP	30-2600-11	BCDNP5005				TVAS-1110 *	
C18	20	10NP	30-2600-12	NP-PRS7200				VLNS-1112 *	
C19	5	10NP	30-2600-14						
C20	200	20	30-2600-9	BCD20200				VLS-1190 *	
C21	200	10	30-2600-8	BCD10190				VLS-1115 *	
C22	100	18	30-2600-18	BCD18100				TE-1211	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Some versions may use 300mfd ⓐ 5VNP (Part 630-2600-3).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	5000	(680mmf) *	BPD-005	DD-503	BYA10D5	CCD-503	GP250	5HK-D50
C24	15 10%		DI-15	DD-150	LI0G15	CCD-150	GP415	10TS-Q15
C25	5000	(2200mmf)*	BPD-005	DD-503	BYA10D5	CCD-502	GP250	5HK-D50
C26	15 10%		DI-15	DD-150	LI0G15	CCD-150	GP215	10TS-Q15
C27	3.3 5%		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C28	27 10%		DI-27	DD-270	LI0G27	CCD-270	GP427	10TS-Q27
C29	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C30	2.7 10%		NPO-SI 3.0		C10V3C			10TCC-V27
C31	1.5 10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V15
C32	20000		BPD-02	DD-203	BYB682	CCD-203	GP120	5HK-E20
C33	3.3 5%		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C34	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C35	2.7 10%		NPO-SI 3.0		C10V3C			10TCC-V27
C36	1.8 10%	630-1221-17			C10V2C			10TCC-V15
C37	1000		BPD-001	DD-103	BYA10D1	CCD-103	GP210	5HK-D10
C38	3.3 5%		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C39	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C40	3.3 10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C41	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C42	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C43	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C44	1.8 10%	630-1221-17			C10V2C			10TCC-V18
C45	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C46	5 5%		NPO-DI 5.0	DTZ-4R7	C10V47C	CCTO-050	CNO-547	10TCC-V5
C47	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C48	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C49	4.7 10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C50	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C51	50000		BPD-05	DD-503	H-0585	1DP-3-503	GP150	5HK-B50
C52	.33 100V 10%		V94C2P33-10%		PM4P33	2DP-5-334	GEM-2033	2WF-P33
C53	.0068 400V 10%		V94C4D68-10%		STM4D68	1DP-1-683	GEM-16268	5BF-D68
C54	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C55	100000			DP-104	H-0591	1DP-3-104	TA-010	5HK-P10
C56	20000		BPD-02	DD-203	BYB682	CCD-203	GP120	5HK-E20

FIXED CAPACITORS (cont)

ITEM No	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No	SPRAGUE PART No.
C57	20000		BPD-02	DD-203	BYA682	CCD-203	GP120	5HK-S20
C58	.22 400V	(.1mfd 400V)*	P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C59	820 10%		DI-820	DD-821	1R5T82	CCD-821	GP382	10TS-T82
C60	27 10%		DI-27	DD-270	LI0Q27	CCD-270	GP427	10TS-Q27
C61	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C62	1.8 10%	(1.5mmf 10%)*			C10V2C			10TCC-V18
C63	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C64	10000		BPD-01	DD-103	BYA10I	CCD-103	GPI10	5HK-S10
C65	5000	Note 1	BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C66	.047 100V		P288N-047	DD-503	STMI947	1DP-2-473	GEM-4147	2TM-S47
C67	100000 10V			DF-104	H-05P1	1DP-2-104	TA-010	5HK-P10
C68	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C69	4700	Note 1	BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C70	1 100V		P288N-1	DF-104	STMIP1	1DP-2-104	GEM-201	2TM-P1
C71	33 100V		P288N-33		PM4P33	2DP-5-334	GEM-2033	2WF-P33
C72	.068 100V		P288N-068		STMI968	1DP-2-683	GEM-4168	2WF-S68
C73	8200		DAC-28	DD-822	HVE10D8	CCD-822	UAC-380	5BF-D82
C74	330		BPD-00033	DD-331	LI0T33	CCD-331	GP333	10TS-T33
C75	2200		BPD-0022	DD-222	BYA10D2	CCD-222	GP222	5HK-D22
C76	.068 100V		P288N-068		STMI968	1DP-2-683	GEM-4168	2WF-S68
C77	.047 100V		P288N-047	DD-503	STMI947	1DP-2-473	GEM-4147	2TM-S47
C78	10000		BPD-01	DD-103	BYA10I	CCD-103	GPI10	5HK-S10
C79	50000		BPD-05	DD-503	H-05B5	1DP-3-503	GP150	5HK-B50
C80	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C81	.033 100V		P288N-033	DD-333	STMI333	1DP-2-333	GEM-4133	2WF-S33
C82	1 100V		P288N-1	DF-104	STMIP1	1DP-2-104	GEM-201	2TM-P1
C83	680		BPD-00068	DD-681	BYA10T68	CCD-681	GP268	10TS-T68
C84	.22 100V		P288N-22		CUB2P22	1DP-3-224	GEM-2022	2TM-P22
C85	.018 100V 10%		V84C4S2-10%		PM2S3	1DP-1-203	GEM-1612	2WF-S18
C86	.022 100V 5%		V94C2P22-5%					5BF-S22
C87	47 3V	#30-1274-3						
C88	10000		BPD-01	DD-103	BYA10SI	CCD-103	GPI10	5HK-S10
C89	470 6000V		HVD-80-470	DD60-471		CCD-471	6HV-347	60GA-T47
C90	500 6000V		HVD-60-470	DD60-501		6CCD-471	6HV-347	60GA-T50
C91	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C92	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10

Philco Part No. * Alternate value. Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: PHILCO PART No.	CENTRALAB	CLAROSTAT	CTS-IRC	MALLORY	INSTALLATION NOTES
R1A	10K	1/4	33-5583-11					Volume
B	Switch							Power Off-On
R2	300Ω	1/4	33-5583-12					Contrast
R3	1000Ω	1/4	33-5583-13					Vert. Hold
R4	5000Ω	1/4	33-5583-14					Horiz. Hold
R5	50K	1/4	33-5583-15					Brightness
R6A	7000Ω	1/4	33-5600-3					Height
B	4000Ω	1/4						Aux. Vert. Hold
C	7000Ω	1/4						Aux. Horiz. Hold
R7	2000Ω	1/4	33-5600-1					Drive Level
R8A	500Ω	1/4	33-5600-2					Aux. Vert. Lin.
B	2000Ω	1/4						Vert. Lin.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R9	12K	
R10	39K	
R11	6.8Ω 5%	
R12	3300Ω	
R13	470Ω	
R14	470Ω	
R15	330Ω	
R16	1800Ω 5%	
R17	470Ω 5%	
R18	3300Ω 5%	
R19	12K 5%	
R20	12K	
R21	2200Ω	
R22	6800Ω	
R23	1000Ω	
R24	220Ω	
R25	1200Ω	
R26	3900Ω	
R27	33K	
R28	1.5meg	
R29	100K	
R30	1000Ω	
R31	33Ω	
R33	1800Ω 5%	
R33	8200Ω 5%	
R34	10K	
R35	560Ω 5%	
R36	27Ω	
R37	330Ω	
R38	680Ω 5%	
R39	3900Ω 5%	
R40	2700Ω 5%	

ITEM No.	RATING	REMARKS
R41	1500Ω 5%	
R42	3900Ω 5%	
R43	1.2meg	
R44	3300Ω	Note 1
R45	2.2meg	
R46	100K	
R47	27K	
R48	2.2meg	(4.7meg)*
R49	4.7meg	(12meg) *
R50	5600Ω 5%	
R51	12000Ω 5%	
R52	4700Ω 5%	
R53	4700Ω 5%	
R54	2700Ω	
R55	180Ω	
R56	1000Ω	
R57	22K 5%	
R58	22K 5%	
R59	120Ω	
R60	2200Ω	
R61	1500Ω	
R62	33Ω	
R63	6800Ω	
R64	27Ω	(18Ω) *
R65	47K	
R66	68K	
R67	10K	
R68	1800Ω	
R69	1800Ω	
R70	680Ω	
R71	10K	
R72	220Ω	

ITEM No.	RATING	REMARKS
R73	150Ω	
R74	3300Ω	
R75	2200Ω	
R76	150Ω	
R77	5600Ω 5%	
R78	430Ω 5%	
R79	430Ω 5%	
R80	10Ω	
R81	6800Ω	
R82	4700Ω	
R83	2700Ω 5%	
R84	1000Ω 5%	
R85	10K	
R86	15K	
R87	4700Ω	
R88	8200Ω	
R89	2700Ω	
R90	3300Ω	
R91	15K	
R92	1000Ω 5%	
R93	470Ω	
R94	2700Ω	
R95	1000Ω	
R96	47Ω	
R97	3.3Ω 5%	
R98	20meg	
R99	10Ω	
R100	47Ω	
R101	47Ω 1W	
R103	1Ω 1W	
R103	5.6Ω 1W	

* Alternate value. Note 1. Not used in some versions.

Note 1

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA
K1	Sound IF Emitter	4700mmf, 470Ω	30-8031-5	Sprague PRC-14
K2	Audio Filter	1000mmf, 3300Ω	30-8031-4	Sprague PRC-13
K3	Audio Filter	1000mmf, 3300Ω	30-8031-4	Sprague PRC-13

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No	Ram PART No	NOTES
L1	47.25MC Trap	32-4784-2						
L2	41.25MC Trap	32-4784-1						
L3	1st Video IF	32-4784-3						
L4	RF Choke	32-4546-13	19-1000	19-1000	BC-561	4602		.96uh
L5	41.25MC Trap	32-4784-1						
L6	2nd Video IF	32-4784-4						
L7	39.75MC Trap	32-4784-5						
L8	3rd Video IF	32-4784-4						
L9	4th Video IF	32-4784-5						
L10	5th Video IF	32-4784-6						
L11	Resonant Choke	32-4674-1						10uh, 40MC
L12	Resonant Choke	32-4645-7						3uh
L13	Series Peaking Coil	32-4782-9	19-3275	19-3275	TV-198	8130	VP-6	270uh
L14	Sound IF	32-4644-21						
L15	Discriminator	32-4789-1						
L16	RF Choke	32-4720-8						28uh
L17	RF Choke	32-4763-17	19-3060	19-3060	TV-193	6110		58uh

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES: PRI	SEC.	REPLACEMENT DATA: PHILCO PART No	Halldorson PART No	Merit PART No	Miller PART No	Ram PART No	Thordarson PART No	NOTES
L18	42Ω		32-4754-4						Horiz. Stab.
L19	34Ω	11.5Ω	32-8914-1						Horiz. Osc. Tank
L20	16Ω	10Ω	32-8914-3						Horiz. Osc. Coupling
L21	1.2Ω	1.1Ω	32-8914-2						Horiz. Buffer Output

FILTER CHOKE

ITEM No	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(.)	REPLACEMENT DATA: PHILCO PART No.	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No.	Triad PART No
L22	.600A	1Ω	47MH	32-8921-1						

TRANSFORMER (POWER)

ITEM No.	RATING: PRI	SEC 1	SEC 2	REPLACEMENT DATA: PHILCO PART No.	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117V ⓐ .13A	15VCT ⓑ .620A		32-8922-1						

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	Halldorson PART No	Merit PART No	Ram PART No	Rogers PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Vert. Osc.	32-8917-1							
T3	Vert. Blanking	32-8915-1							
T4	Yoke-Horiz. (.25MH) (30°)-Vert. (44MH)	76-11657-2 ①							
	Alt. Yoke	76-11657-1							
	Yoke Retainer & Centering Device	76-11801							
T5	Horiz. Output	32-8905-3							

① Includes clamp assembly.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO: PRI.	SEC.	REPLACEMENT DATA: PHILCO PART No.	Halldorson PART No	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	1	1	32-8916-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: PHILCO PART No.	Halldorson PART No	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T7	70Ω CT	3.2Ω	32-8908-1							

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V C IMP.	REPLACEMENT DATA: PHILCO PART No	QUAM PART No	NOTES
SP1	31"	PM	3-4Ω	36-1652-5	3A07	

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: PHILCO PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.620A	34-8048-3	SD500	HA504	10R	SR500	Silicon Type
M2	.620A	34-8048-3	SD500	HA504	10R	SR500	Silicon Type
M3	.001A	34-8050-3	SD500	HA504	F-2	SR200	Silicon Type
M4	.040A	34-8050-7	SD500	HA504	F-2	SR200	Silicon Type
M5	.010A	34-8050-2	SD500	HA504	F-2	SR200	Silicon Type

PHILCO MODELS H2010BL, H2010L (CH. 10A7IO)

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M6	3AG	1.6A 125V S/B P/T	45-2656-23		31501.6 (3AG 1.6A 125V S/B P/T)		MDV 1 6/10	

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M7	7½V	41-8066				560			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M8	1N60A	34-8022-3	1N60	1N60	1N60	Video Detector (Pigtail)
M9	1N60A	34-8022-3	1N60	1N60	1N60	FM Discriminator (Pigtail)
M10	1N60A	34-8022-3	1N60	1N60	1N60	FM Discriminator (Pigtail)
M11	1N60A	34-8022-3	1N60	1N60	1N60	Phase Detector (Pigtail)
M12	1N60A	34-8022-3	1N60	1N60	1N60	Phase Detector (Pigtail)
M13	1N60A	34-8022-3	1N60	1N60	1N60	Noise Switch (Pigtail)
M14	1N91	34-8051				Horiz. Damper (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M15	Tuner	76-11773	VHF (T-110)
M16	Switch	42-2116-2	Function (AC-Battery-Charge)
M17	Switch	42-2113-1	Range (Fringe, Normal, Strong)
M18	Magnet	76-10970-1	Beam Aligning
M19	Antenna		JFD Replacement Part #TA390
	Printed Board	54-6992	Video, IF, Sync, Sound
	Printed Board	54-6991	Deflection
	Printed Board	54-6990	Vert. Output

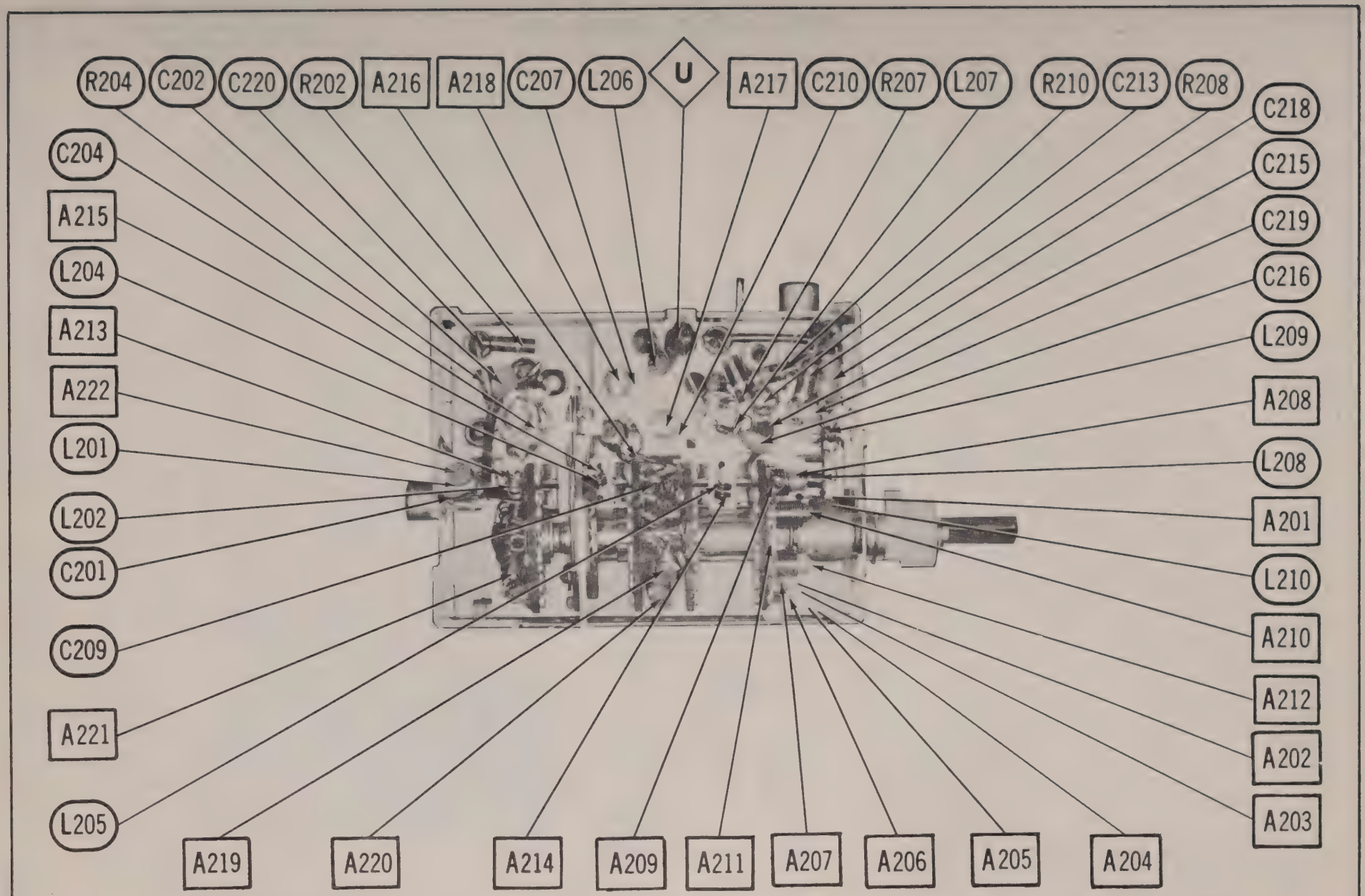
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

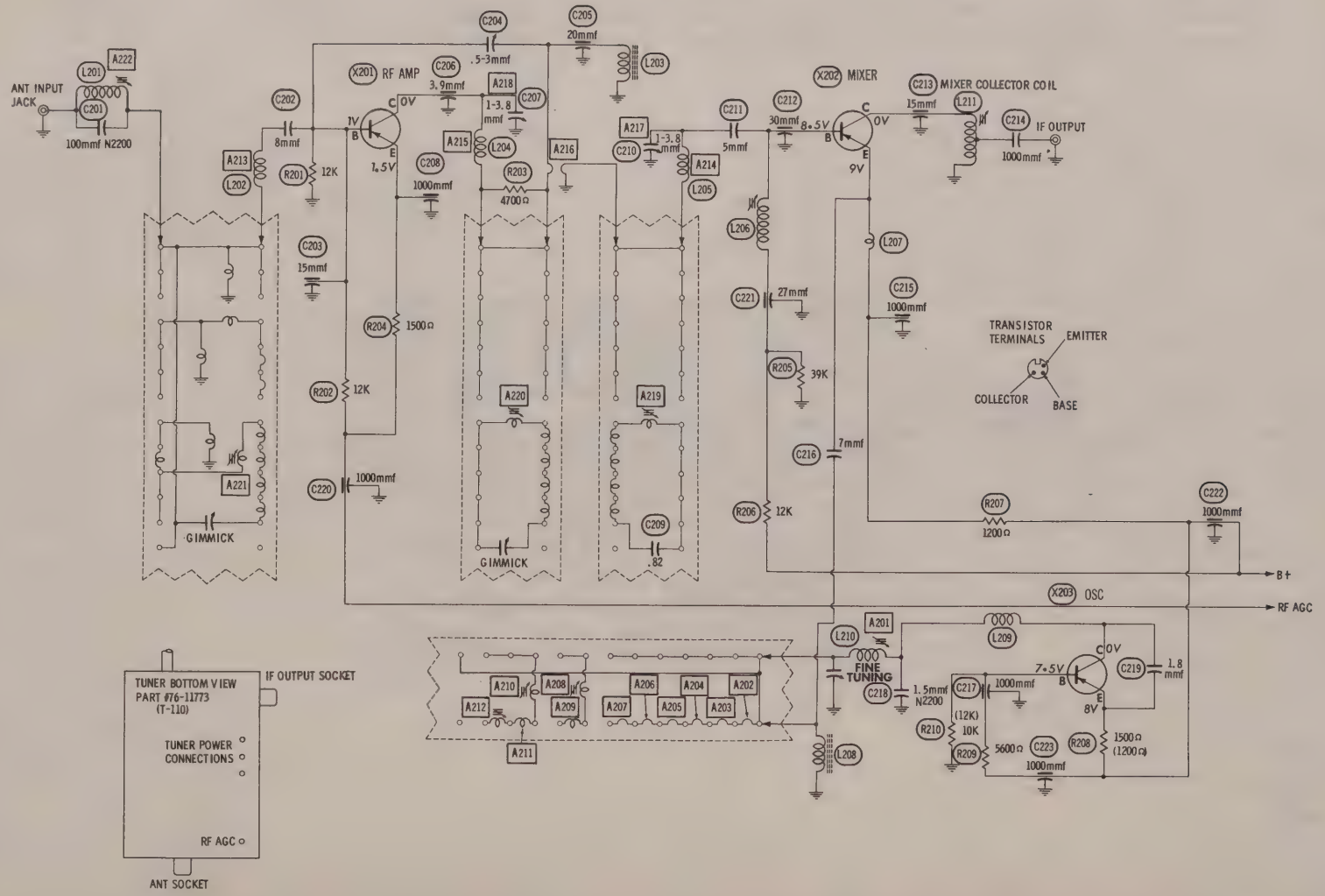
NAME	PART NO.	DESCRIPTION
Knob	28-11353-2	Channel Selector, Model H-2010L
Knob	28-11353-4	Channel Selector, Model H-2010BL
Knob	54-5577-1	Fine Tuning
Knob	54-6265-48	Off-On-Volume, Brightness, Contrast, Vert. Hold, Model H2010L
Knob	54-6265-51	Off-On-Volume, Brightness, Contrast, Vert. Hold, Model H2010BL
Knob	54-5638-1	Function, Model H2010L
Knob	54-5638-2	Function, Model H2010BL
Knob	54-6265-49	Range, Model H2010L
Knob	54-6265-52	Range, Model H2010BL
Knob	54-6265-50	Time Indicator, Model H2010L
Knob	54-6265-53	Time Indicator, Model H2010BL
Beam Splitter	54-5575	Part of Optical System
Mirror	54-5576	Part of Optical System
Lid	54-5570-1	Visor, Part of Optical System, Model H2010L
Lid	54-5570-2	Visor, Part of Optical System, Model H2010BL
Mask	28-13111	Part of Optical System
Housing	54-5568-1	Part of Optical System
Tilt Mechanism	76-11788	Part of Optical System
Cabinet	54-5575-3	Model H2010L
Cabinet	54-5574-4	Model H2010BL
Cabinet Top	54-5569-1	Brown, Model H2010L, H2010BL
Cabinet Top	54-5569-2	Black, Models H2010L, H2010BL
Handle Assembly	76-11805-1	Model H2010L
Handle Assembly	76-11805-2	Model H2010BL

WIRING DATA

High Voltage Lead ..... Use BELDEN No. 8869
Shielded Hook-up Wire ..... Use BELDEN No. 8885 (Single Conductor)
8738 (Two Conductor)
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type) ..... Use BELDEN No. 8874
300Ω Tuner Input Lead ..... Use BELDEN No. 8225
300Ω Antenna Lead-in ..... Use BELDEN No. 8230 or 8275
Antenna Rotor Cable ..... Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor
8485 (Round) - 5 Conductor
8488 (Round) - 8 Conductor



TUNER 76-11773 (T110) BOTTOM VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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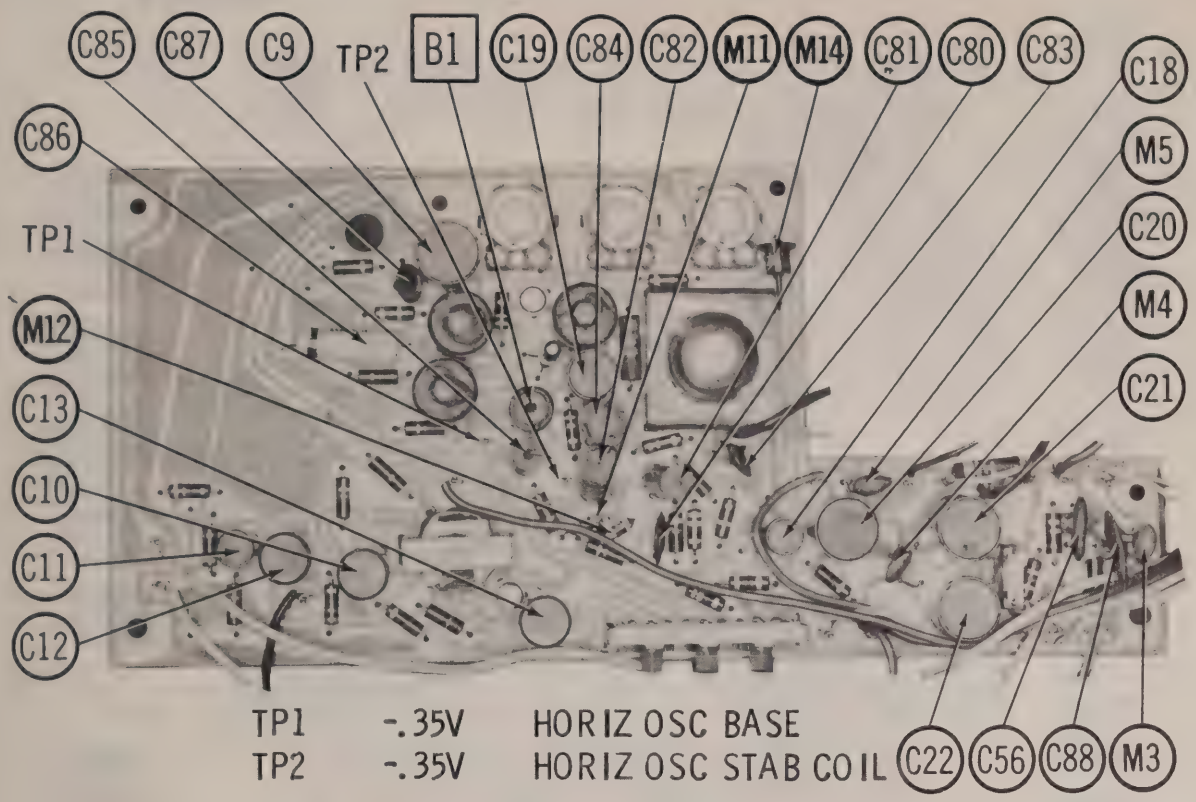
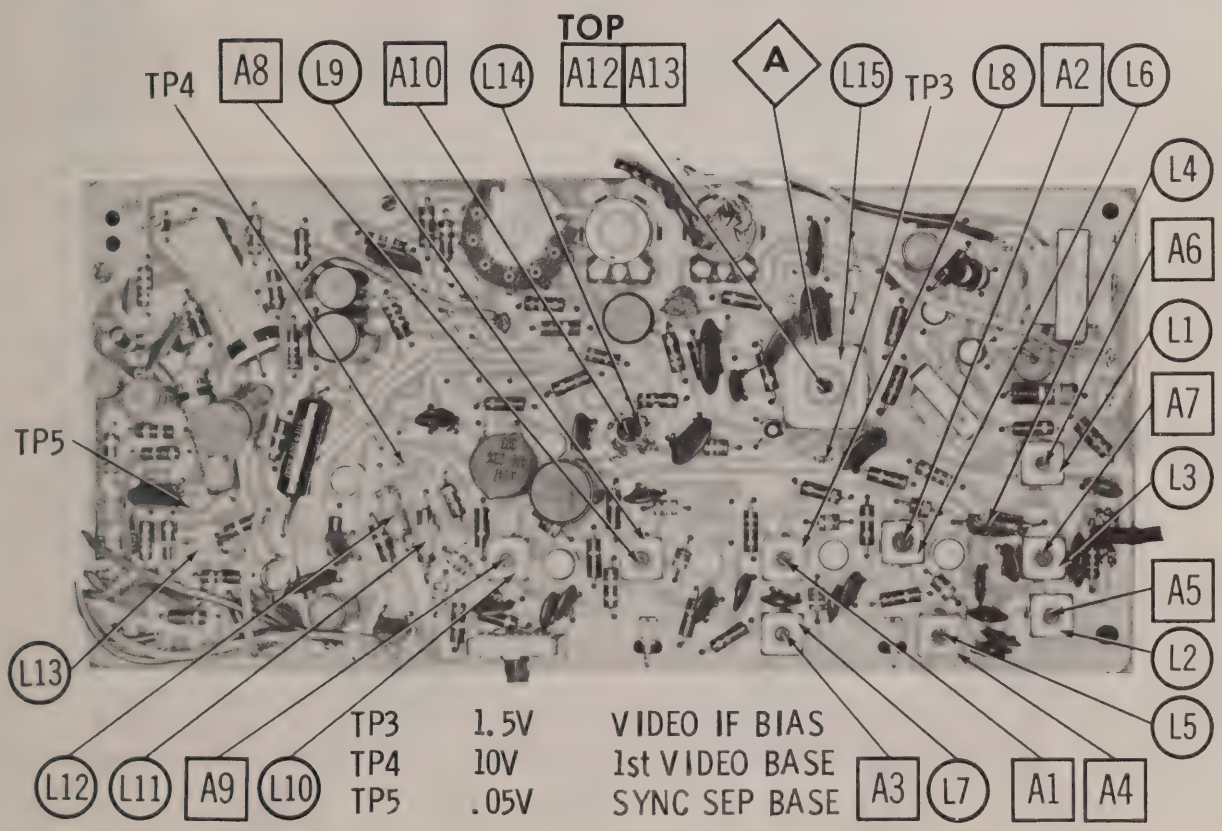
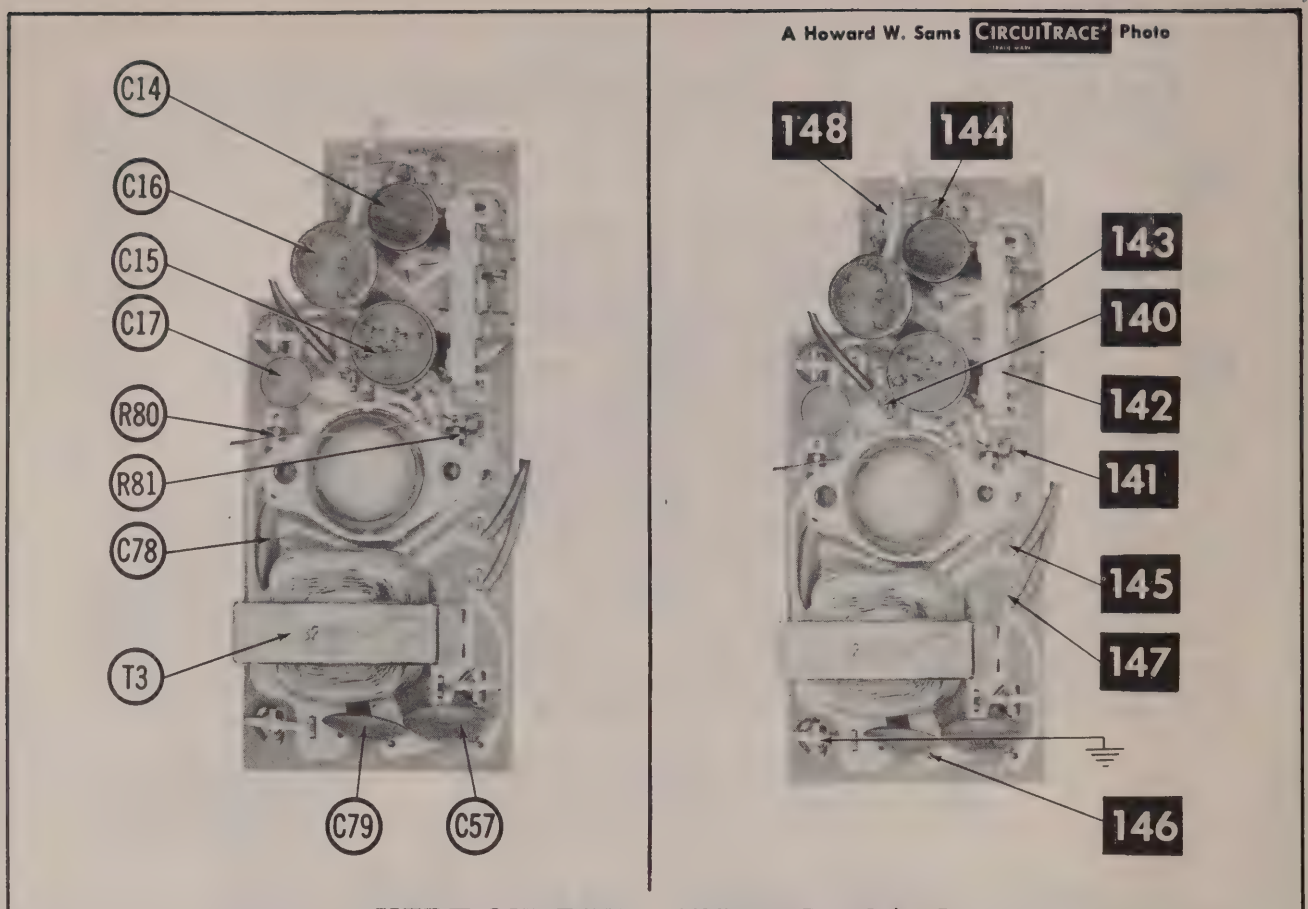
VHF TUNER 76-11773 (T110)



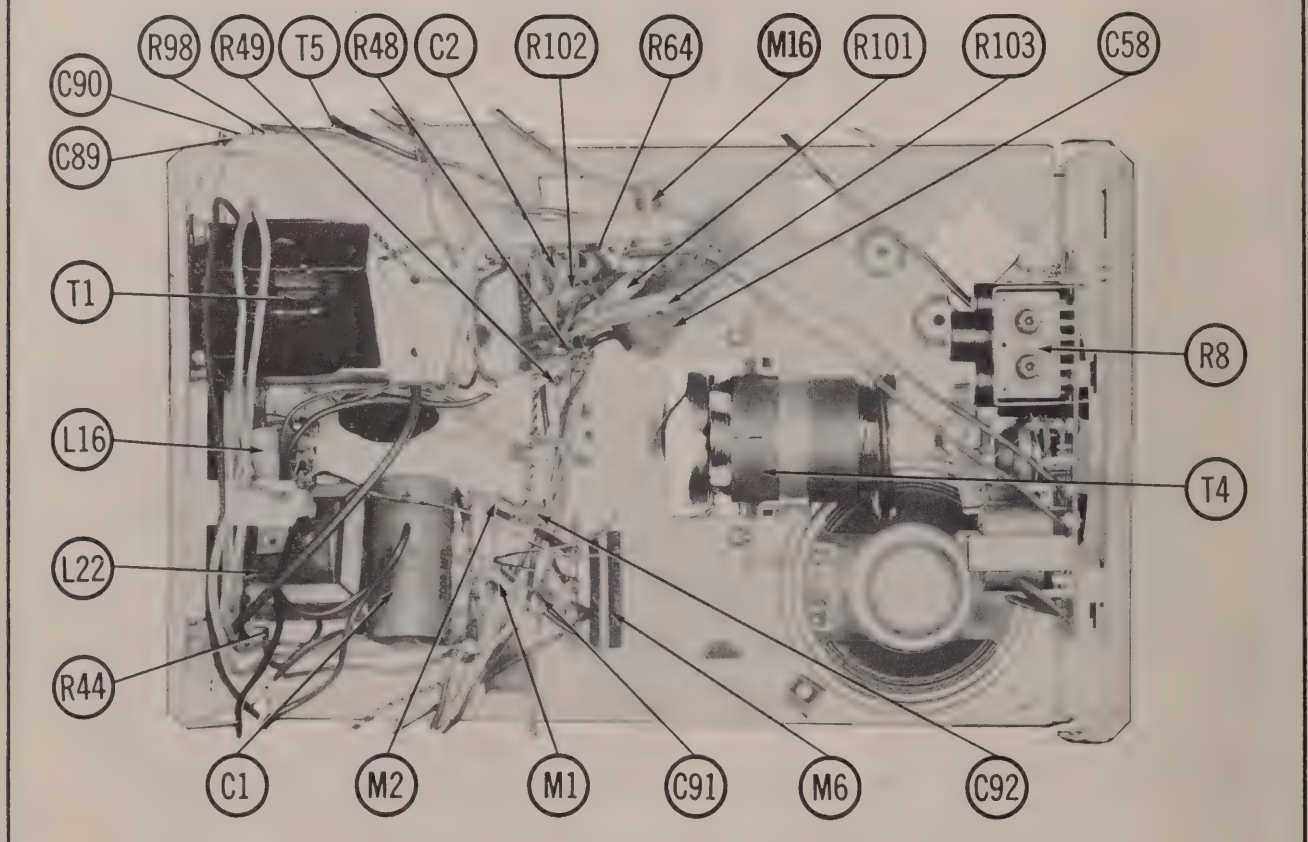
SWEEP PRINTED BOARD - CAPACITOR & MISC IDENT



VIDEO, SOUND, SYNC PRINTED BOARD - ALIGNMENT & INDUCTOR IDENT

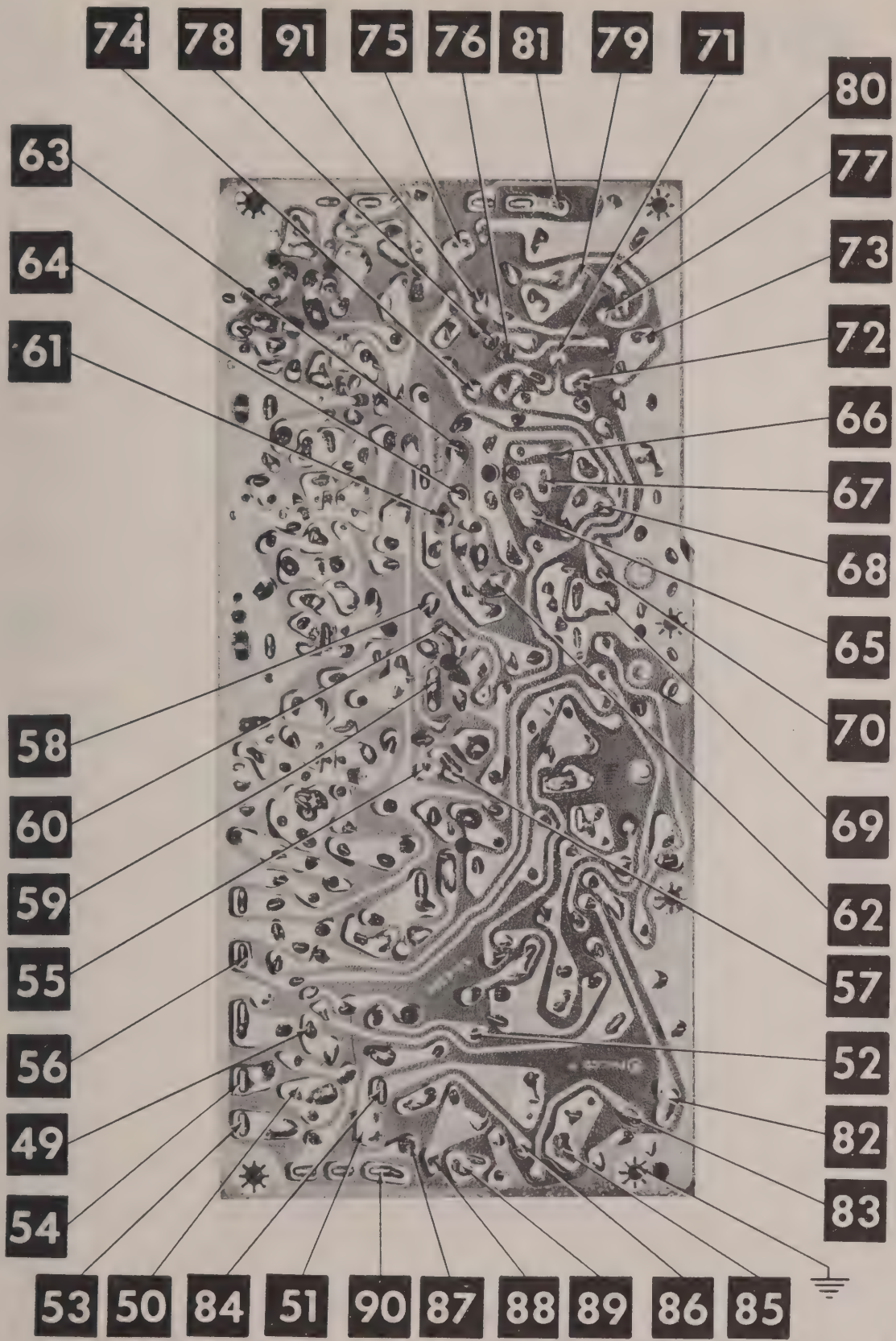


VERT OUTPUT PRINTED BOARD



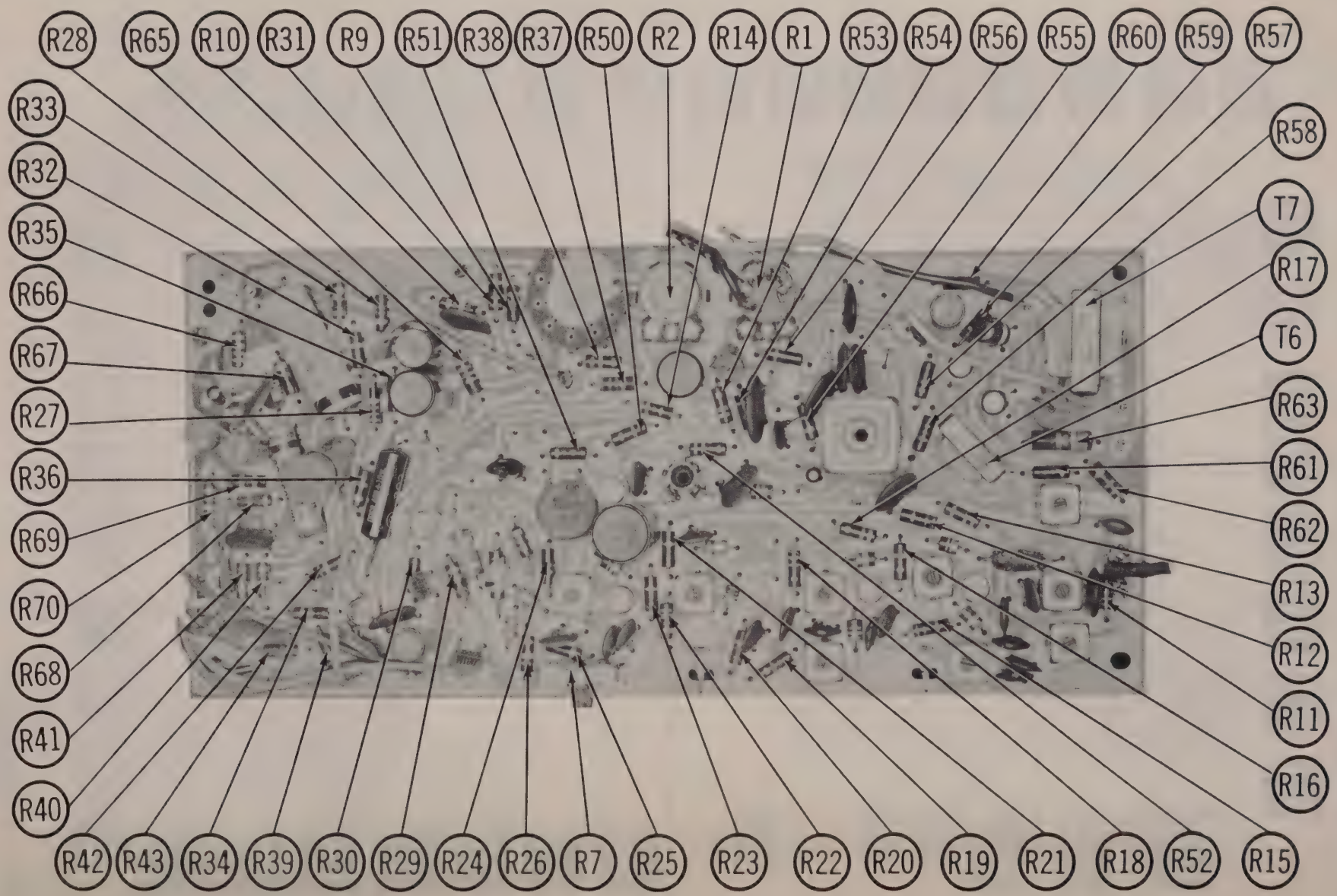
CHASSIS - RESISTOR, INDUCTOR, TRANSFORMER & MISC IDENT

CircuiTrace Numbers 49 thru 91

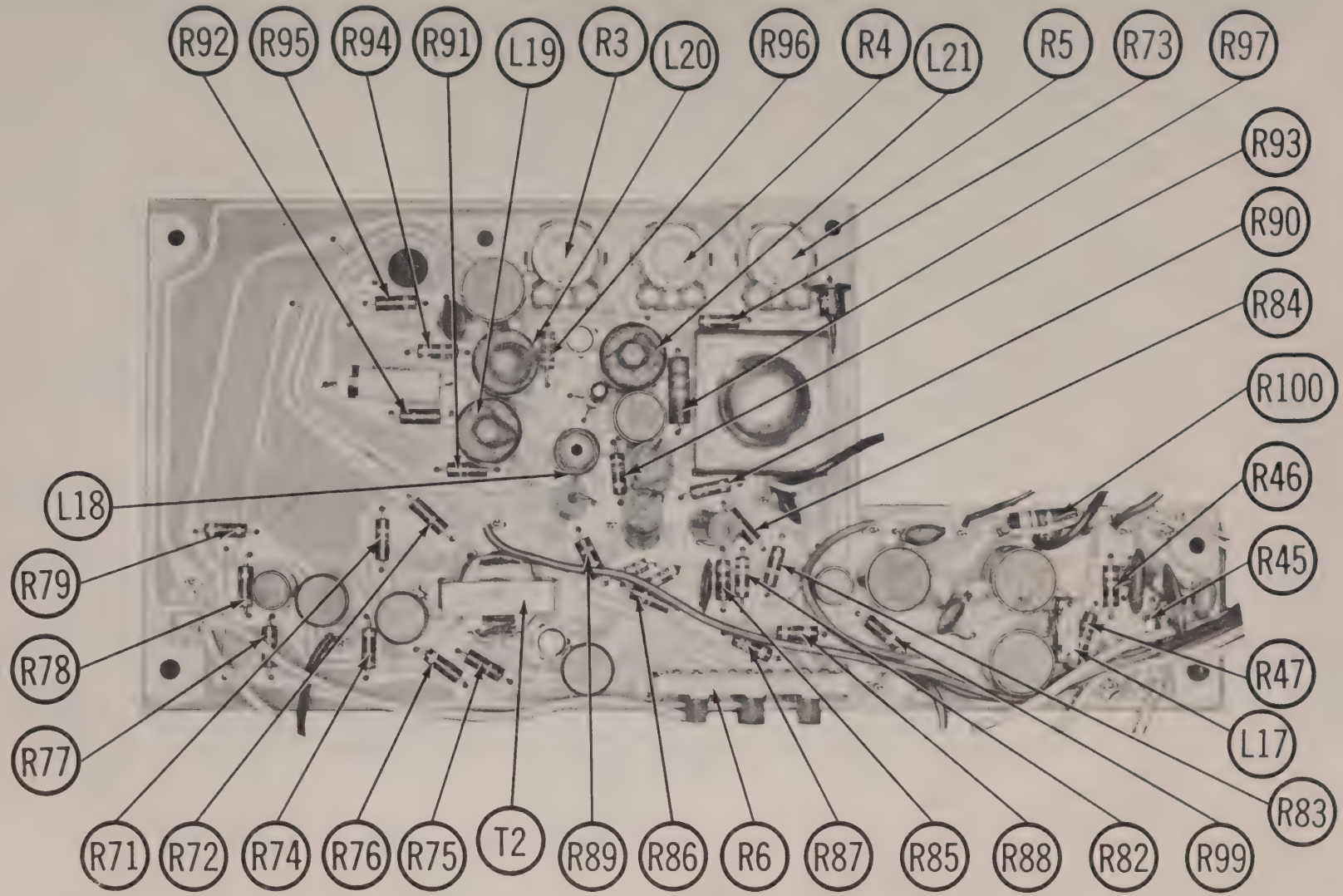


A Howard W. Sams CIRCUITRACE® Photo

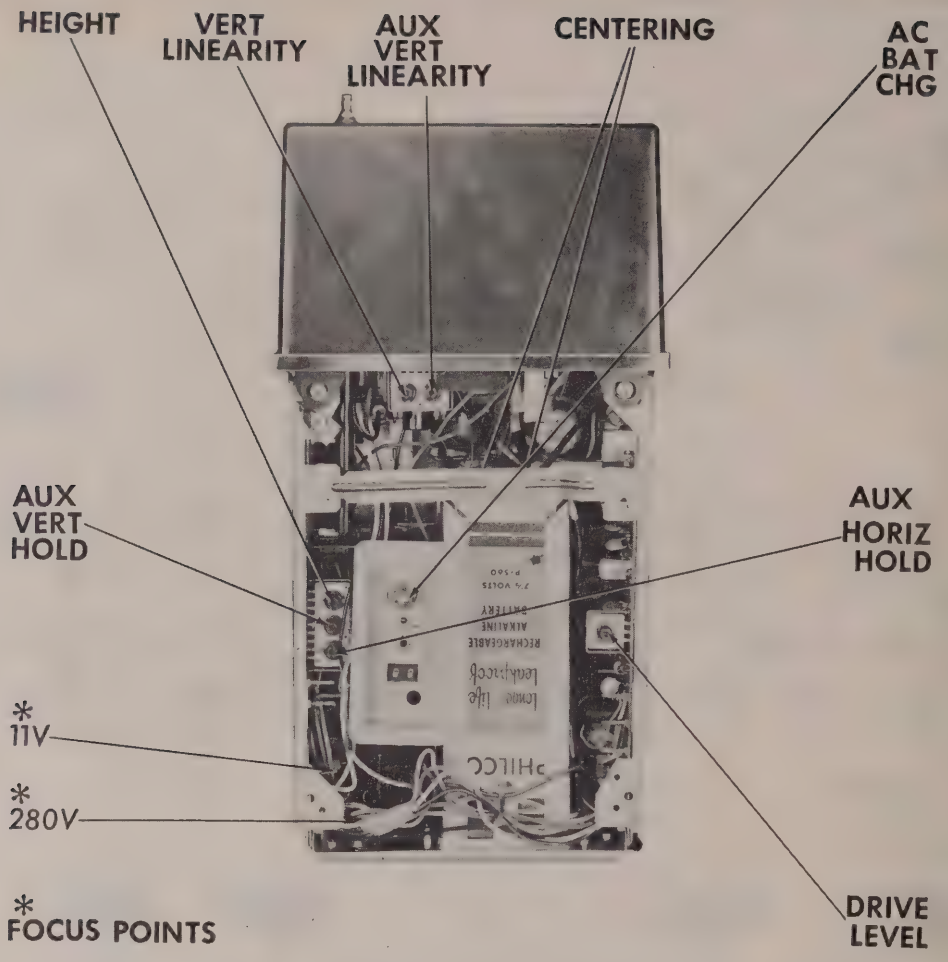
VIDEO, SOUND, SYNC PRINTED BOARD



VIDEO, SOUND, SYNC PRINTED BOARD - RESISTOR & TRANSFORMER IDENT



SWEEP PRINTED BOARD - RESISTOR & INDUCTOR IDENT



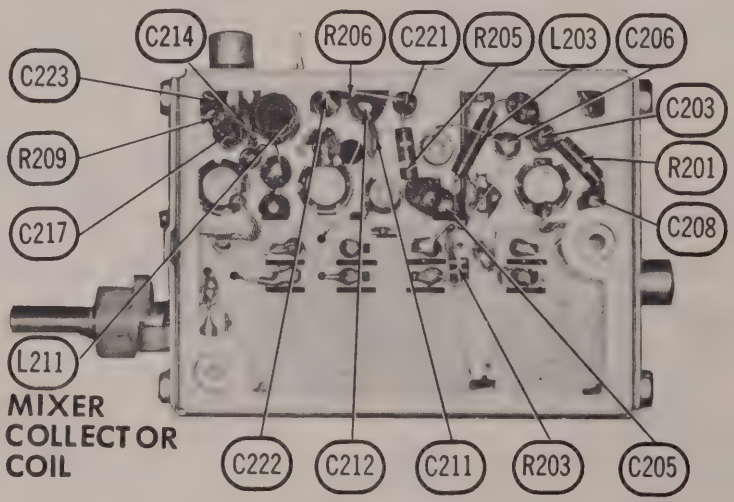
CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a clip lead from TP-1 to TP-2. Connect a clip lead from TP-5 to chassis. With a station signal tuned in, set Horizontal Hold to center of its range. Adjust the Aux. Horizontal Hold (R6C) to correct line frequency (the picture will not be stable). Remove the clip lead from TP-1 and TP-2. Adjust the Horizontal Frequency slug (B1) to correct line frequency (again the picture will not be stable).

Remove the clip lead from TP-5 and chassis.

Rotate Aux. Horizontal Hold counterclockwise until picture loses sync. Then, slowly clockwise until picture just pulls into sync.



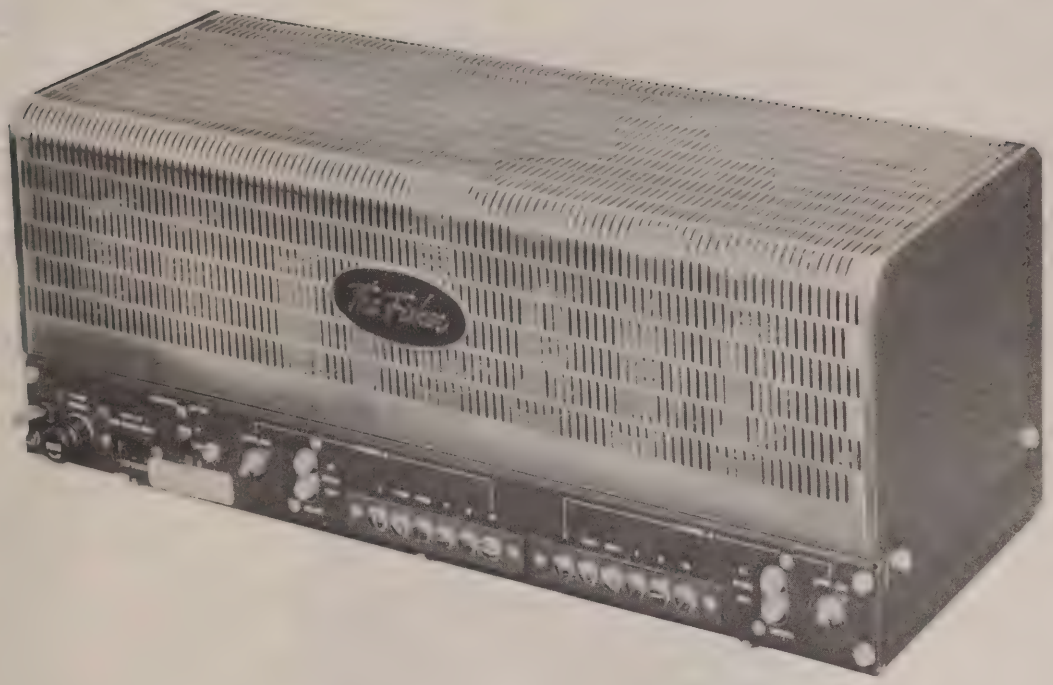
TUNER 76-11773(110) —TOP VIEW

PHOTOFACT® Folder

EIA

FISHER MODEL SA-300

FISHER MODEL SA-300



FISHER MODEL SA-300

TRADE NAME	Fisher Model SA-300		
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Lond Island City 1, N. Y.		
TYPE SET	AC Operated 10 Tube Stereo Amplifier		
POWER SUPPLY	105-120 Volts AC, 50-60 Cycles	RATING	230 Watts, 2.2 Amp. @ 117 Volts AC

ADJUSTMENTS

HUM & DC BALANCE

1. Remove all connections to amplifier except power cord.
2. Turn Input Level Controls (R1, R2) fully counterclockwise and Balance Switch (M3) off.
3. Connect an AC VTVM between Channel A output terminals 16 and GND.
4. Adjust Channel A DC Balance (R3) and Hum (R8) for minimum meter deflection (should not exceed .2MV).
5. Connect an AC VTVM between Channel B output terminals 16 and GND.
6. Adjust Channel B DC Balance (R6) and Hum (R9) for minimum meter deflection (should not exceed .2MV).

PHASE INVERTER BALANCE

1. Remove all connections to amplifier except power cord.
2. Turn Input Level controls (R1, R2) fully counterclockwise and Balance Switch (M3) to Channel A.
3. Connect an AC VTVM between Channel A output terminals 16 and GND.
4. Adjust AC Balance (R4) for minimum meter deflection.
5. Repeat procedure for Channel B.
6. Turn Balance Switch (M3) to Off.

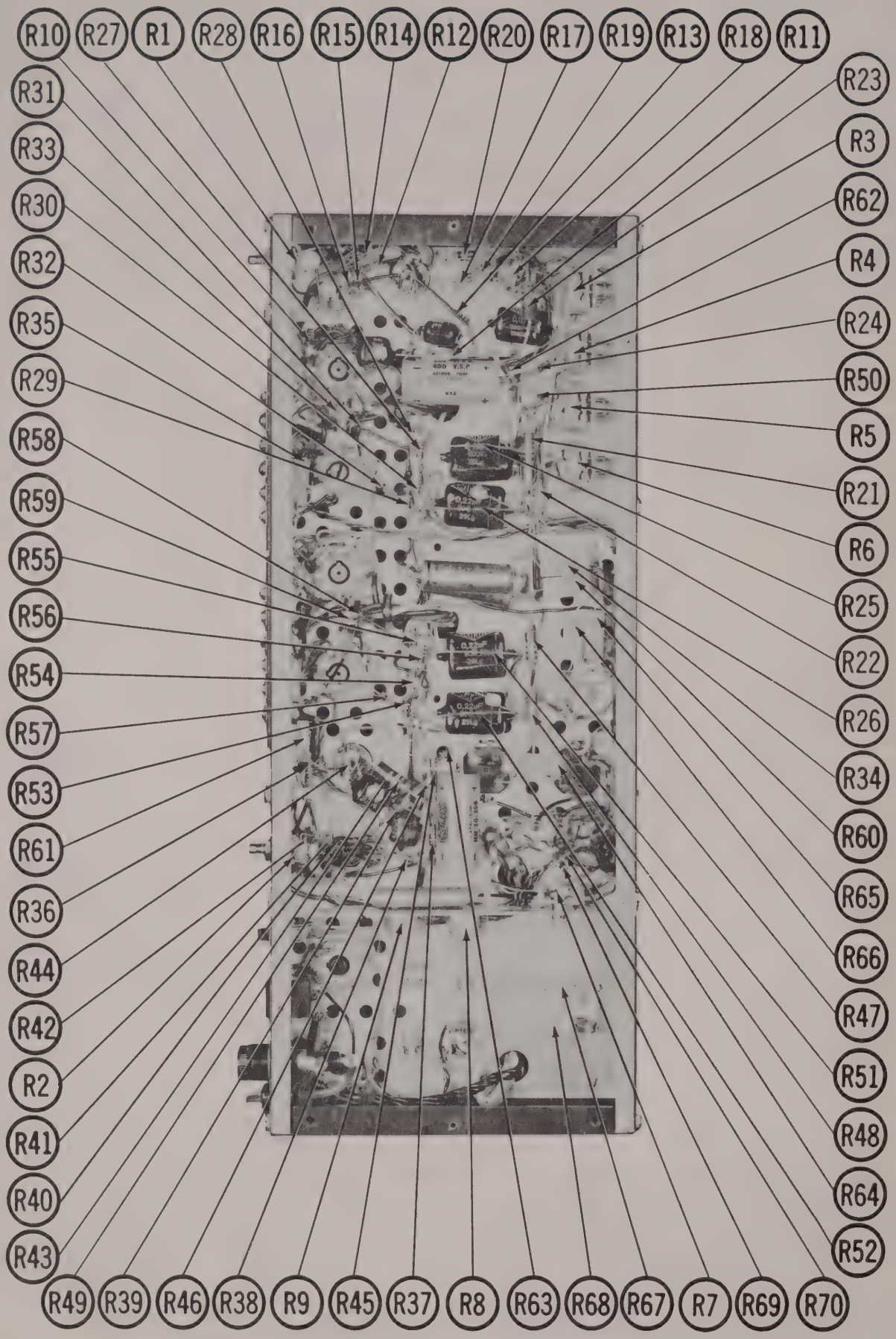
BIAS

1. Connect a DC VTVM from point Ⓐ to chassis.
2. Adjust power source for 117 Volts AC.
3. Turn Balance Switch (M3) off.
4. Adjust Bias (R7) for 7.8 Volts.
5. Connect meter to point Ⓑ. Meter should indicate between 7.3V and 8.3V. If necessary, readjust R7.

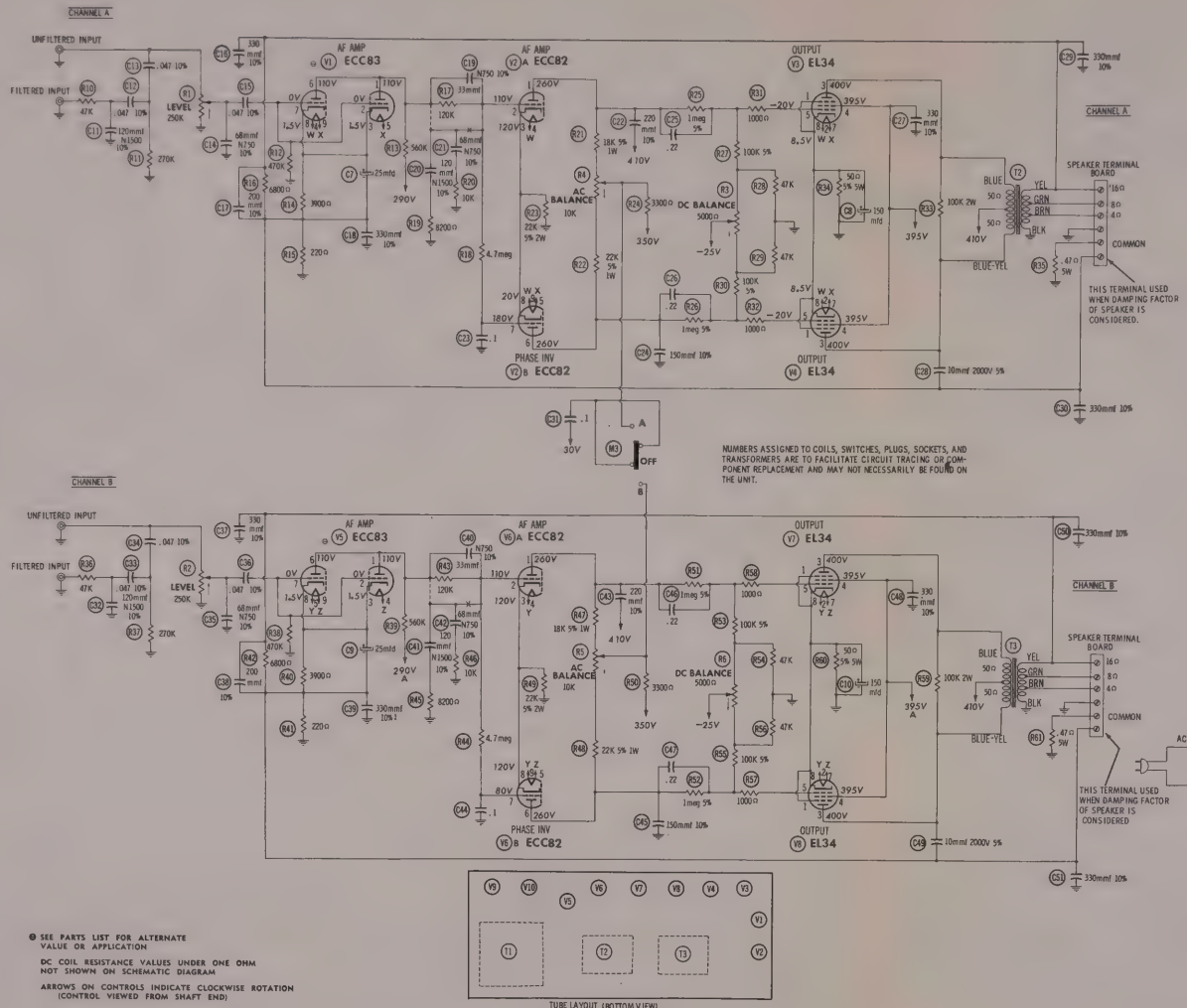
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JV621



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



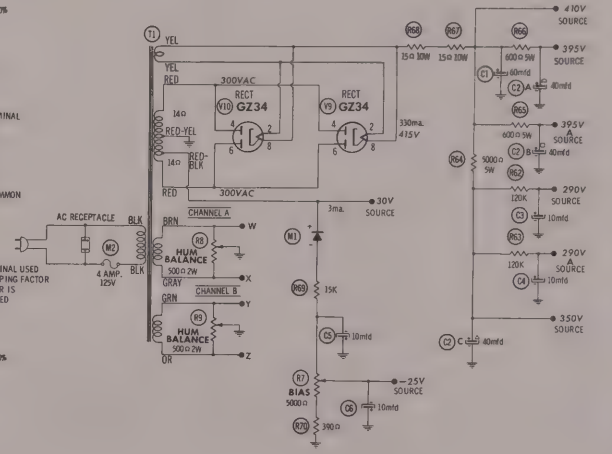
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83	↑685K	470K	4100Ω	125Ω	125Ω	↑685K	470K	4100Ω	125Ω
V2	ECC82	↑33K	↑800K	22K	125Ω	125Ω	↑35K	↑5.4meg	22K	125Ω
V3	EL34	50Ω	125Ω	↑80Ω	↑630Ω	135K	NC	125Ω	50Ω	
V4	EL34	50Ω	125Ω	↑80Ω	↑630Ω	135K	NC	125Ω	50Ω	
V5	ECC83	↑680K	470K	4100Ω	125Ω	125Ω	↑680K	470K	4100Ω	125Ω
V6	ECC82	↑33K	↑800K	22K	125Ω	125Ω	↑35K	↑5.4meg	22K	125Ω
V7	EL34	50Ω	125Ω	↑80Ω	↑630Ω	135K	NC	125Ω	50Ω	
V8	EL34	50Ω	125Ω	↑80Ω	↑630Ω	135K	NC	125Ω	50Ω	
V9	GZ34	NC	¶	NC	14Ω	NC	14Ω	NC	¶	
V10	GZ34	NC	¶	NC	14Ω	NC	14Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V10.
NC NO CONNECTION

TUBE LAYOUT (BOTTOM VIEW)



● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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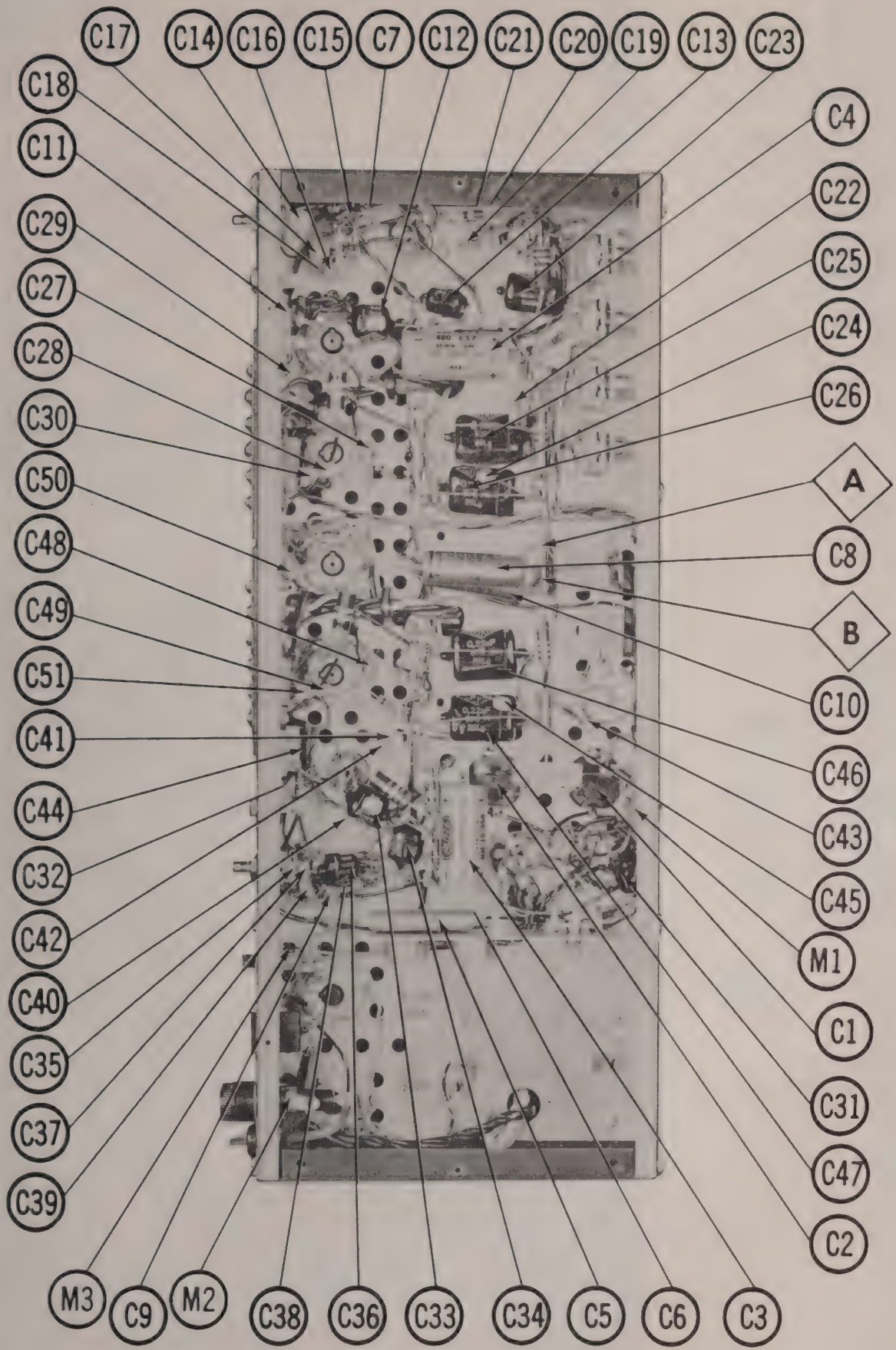
FISHER MODEL SA-300



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

FISHER MODEL SA-300

FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Channel A AF Amp.	ECC83 (12AX7, 7025)*
V2	Channel A AF Amp. - Phase Inverter	ECC82 (12AU7A) *
V3	Channel A Output	EL34 (6CA7) *
V4	Channel A Output	EL34 (6CA7) *
V5	Channel B AF Amp.	ECC83 (12AX7, 7025)*
V6	Channel B AF Amp. - Phase Inverter	ECC82 (12AU7A) *
V7	Channel B Output	EL34 (6CA7) *
V8	Channel B Output	EL34 (6CA7) *
V9	Rectifier	GZ34 (5AR4) *
V10	Rectifier	GZ34 (5AR4) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	60	500	C729-131	AFH1-62	A0560	FP176 TC83	TMS-70	TVL-1958	
C2A	▲40	450	C729-132	AFH3-44	C0350	FP377	TMT-40	TVL-3787	
B	■40	450							
C	▲40	450							
C3	10	350	C644-146	PRS1620	BR1045	TC62	TD-10-450	TVA-1604	
C4	10	350	C644-146	PRS1620	BR1045	TC62	TD-10-450	TVA-1604	
C5	10	150	C729-133	SRE150V10	NLW10-150	TT150X10	TD-10-150	TE-1507	
C6	10	150	C729-133	SRE150V10	NLW10-150	TT150X10	TD-10-150	TE-1507	
C7	25	6	C639-114	XPP-6025	NLW25-6	TT6X25	TD-25-25	TE-1091	
C8	150	30	C663-137	PRS1350	BR1505	TC495	TD-150-50	TVA-1311	
C9	25	6	C639-114	XPP-6025	NLW25-6	TT6X25	TD-25-25	TE-1091	
C10	150	30	C663-137	PRS1370	BR1505	TC495	TD-150-50	TVA-1311	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C11	120 N1500 10%	#C50070-9				*		
C12	.047 250V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C13	.047 250V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C14	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C15	.047 250V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C16	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C17	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C18	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C19	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C20	120 N1500 10%	#C50070-9				*		
C21	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C22	220 10%			D6-221	L10T22	CCD-221	GP322	10TS-T20
C23	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C24	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C25	.22 500V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C26	.22 500V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C27	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C28	10 2000V 5%	#C50168-2						
C29	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C30	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C31	.1 500V		P688N-1	DF-104	CUB6P1	.6DP-4-224	GEM-601	6TM-P1
C32	120 N1500 10%	#C50070-9				*		
C33	.047 250V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C34	.047 250V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C35	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C36	.047 250V 10%		V84C4S47-10%		PM4S47	4DP-3-473	GEM-1615	4TM-S47
C37	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C38	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C39	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C40	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	120 N1500 10%	#C50070-9				*		
C42	68 N750 10%		N750-DI 68	DTN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C43	220 10%			D6-221	L10T22	CCD-221	GP320	10TS-T22
C44	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P1
C45	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C46	.22 500V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C47	.22 500V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C48	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C49	10 2000V 5%	#C50168-2						
C50	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C51	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33

\# Fisher Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	250K	1/4	R50160-3	JL-254				Level, Channel A
R2	250K	1/4	R50160-3	JL-254				Level, Channel B
R3A	5000Ω	1/2	R50103-4	BX-10	A47-5000-S	Q11-114	U14	DC Balance, Channel A
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R4A	10K	1/2	R50103-5	AB-14	A47-10K-S	Q11-116	U20	AC Balance, Channel A
B	Shaft			AK-1	FKS-1/4	Not Req.	Not Req.	
R5A	10K	1/2	R50103-5	AB-14	A47-10K-S	Q11-116	U20	AC Balance, Channel B
B	Shaft			AK-1	FKS-1/4	Not Req.	Not Req.	
R6A	5000Ω	1/2	R50103-4	BX-10	A47-5000-S	Q11-114	U14	DC Balance, Channel B
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R7A	5000Ω	1/2	R50103-4	BX-10	A47-5000-S	Q11-114	U14	Bias
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R8	500Ω	2(WW)	R516-128			-		Hum Balance, Channel A
R9	500Ω	2(WW)	R516-128					Hum Balance, Channel B

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R10	47K	
R11	270K	
R12	470K	
R13	560K	
R14	3900Ω	
R15	220Ω	
R16	6800Ω	
R17	120K	
R18	4.7meg	
R19	8200Ω	
R20	10K	
R21	18K 5% 1W	
R22	22K 5% 1W	
R23	22K 5% 1W	
R24	3300Ω	
R25	1meg 5%	
R26	1meg 5%	
R27	100K 5%	
R28	47K	
R29	47K	
R30	100K 5%	

ITEM No.	RATING	REMARKS
R31	1000Ω	
R32	1000Ω	
R33	100K 2W	
R34	50Ω 5% 5W	
R35	.47Ω 5W	
R36	47K	
R37	270K	
R38	470K	
R39	560K	
R40	3900Ω	
R41	220Ω	
R42	6800Ω	
R43	120K	
R44	4.7meg	
R45	8200Ω	
R46	10K	
R47	18K 5% 1W	
R48	22K 5% 1W	
R49	22K 5% 2W	
R50	3300Ω	
R51	1meg 5%	

ITEM No.	RATING	REMARKS
R52	1meg 5%	
R53	100K 5%	
R54	47K	
R55	100K 5%	
R56	47K	
R57	1000Ω	
R58	1000Ω	
R59	100K 2W	
R60	50Ω 5% 5W	
R61	.47Ω 5W	
R62	120K	
R63	120K	
R64	5000Ω 5W	
R65	600Ω 5W	
R66	600Ω 5W	
R67	15Ω 10W	
R68	15Ω 10W	
R69	15K	
R70	390Ω	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 2.2A	660VCT @ .330A Tap @ 55VAC @ .003A	5V @ 4A	T729-115						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 3.6A	6.3V @ 3.6A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4000Ω CT	16Ω Tap @ 8Ω, 4Ω	T729-116							
T3	4000Ω CT	16Ω Tap @ 8Ω, 4Ω	T729-116							

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	FISHER PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.003A	SR588-128 ①	D-5413 ①		10 ①		① Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FISHER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	4A 125V S/B	F729-145		313004 (3AG 4A 125V S/B)	342001	MDX4	HKP

MISCELLANEOUS

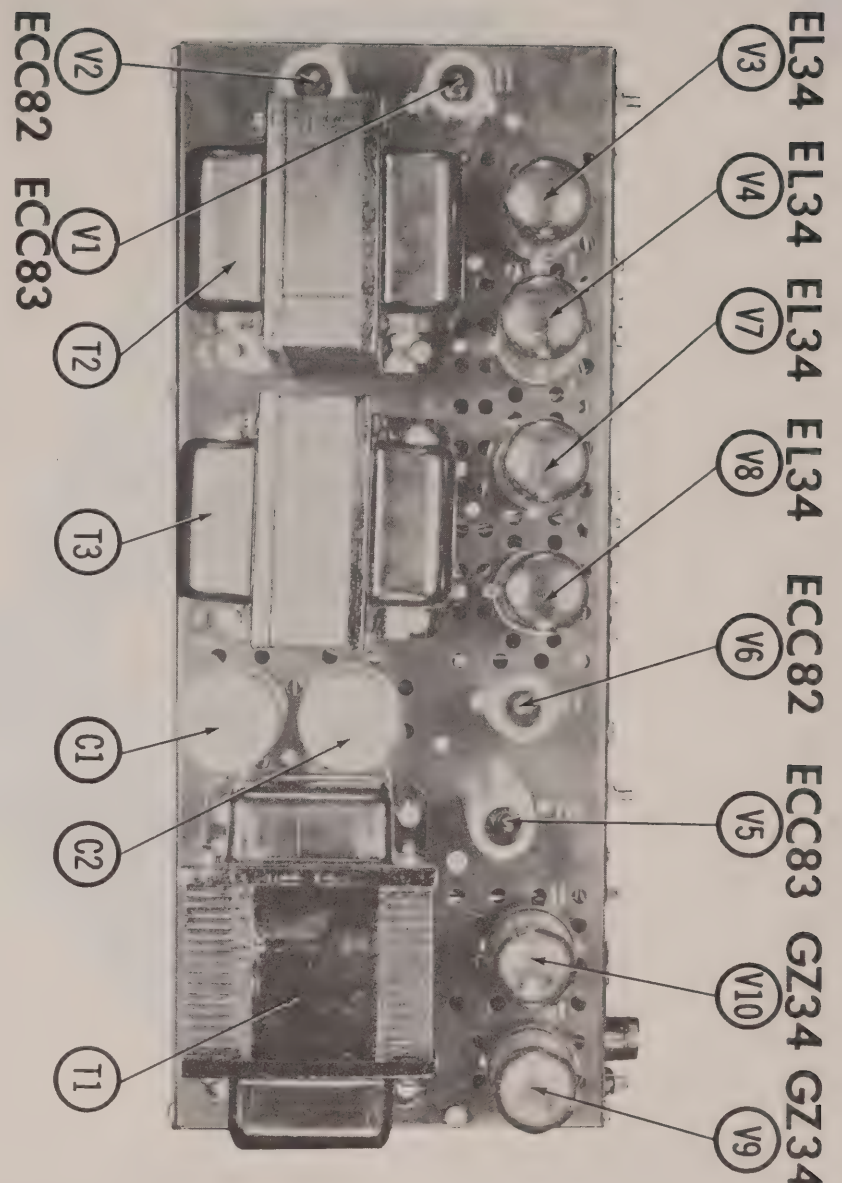
ITEM No.	PART NAME	FISHER PART No.	NOTES
M3	Switch	S557-138	Balance

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—TOP VIEW



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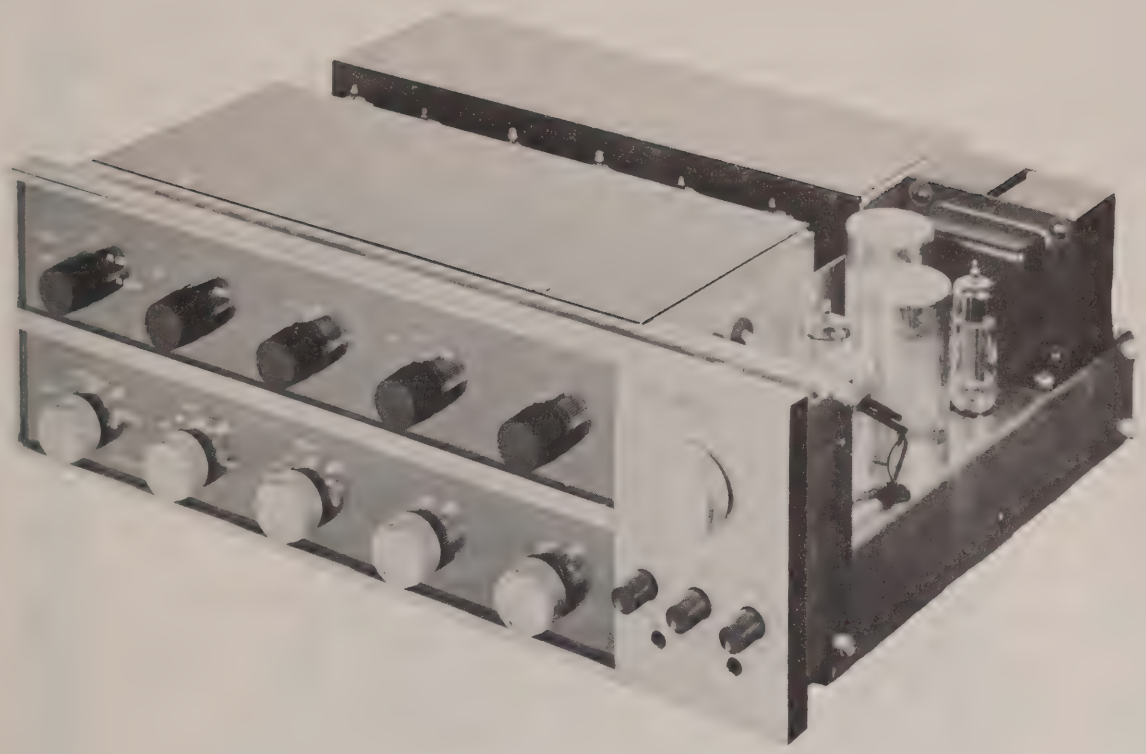
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MCINTOSH MODEL C20

MCINTOSH
MODEL C20



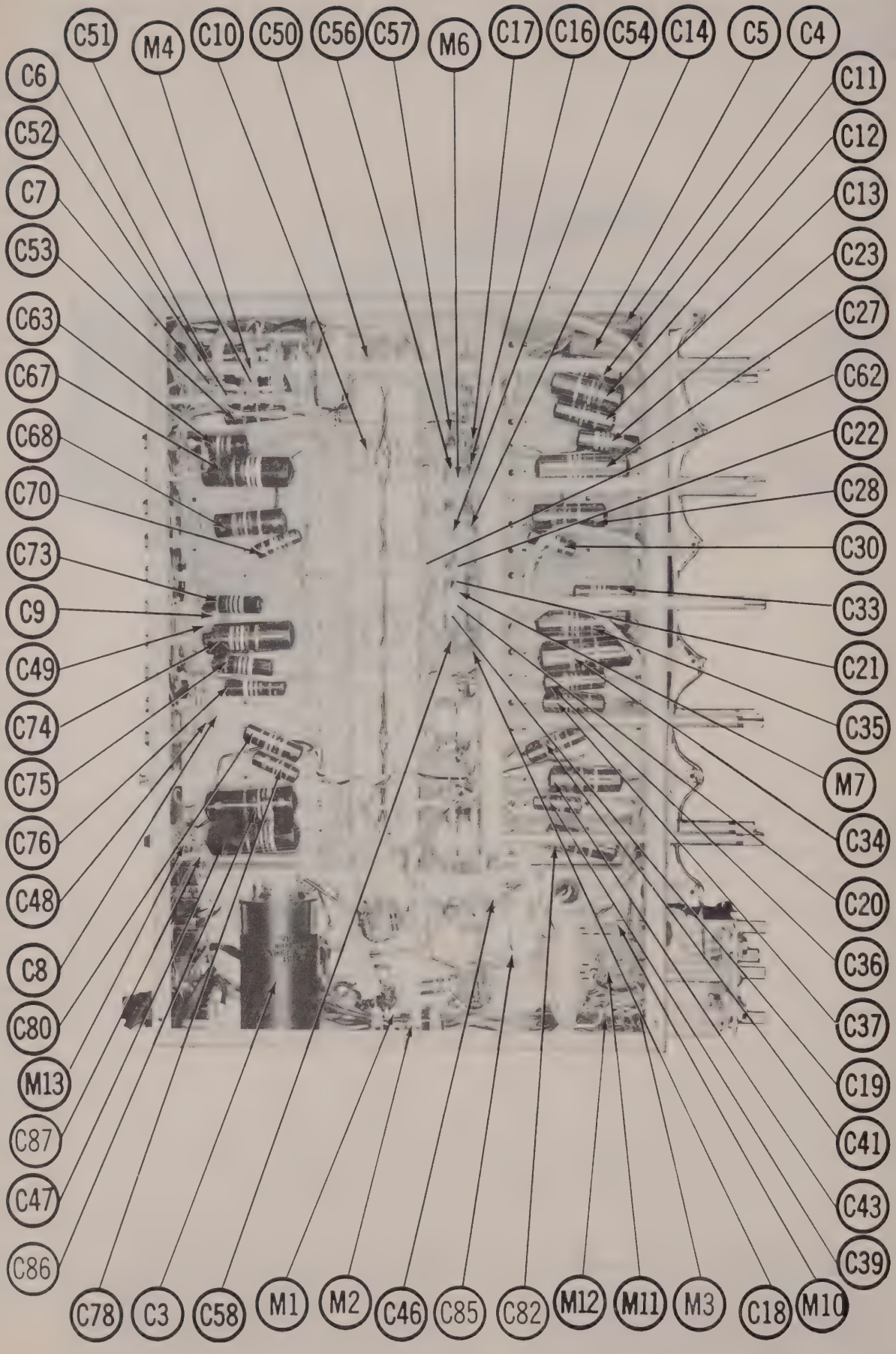
MCINTOSH
MODEL C20

TRADE NAME	McIntosh Model C20
MANUFACTURER	McIntosh Laboratory Inc., 2 Chambers Street, Binghamton, N. Y.
TYPE SET	AC Operated 8 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 38 Watts, .38 Amp. @ 117 Volts AC

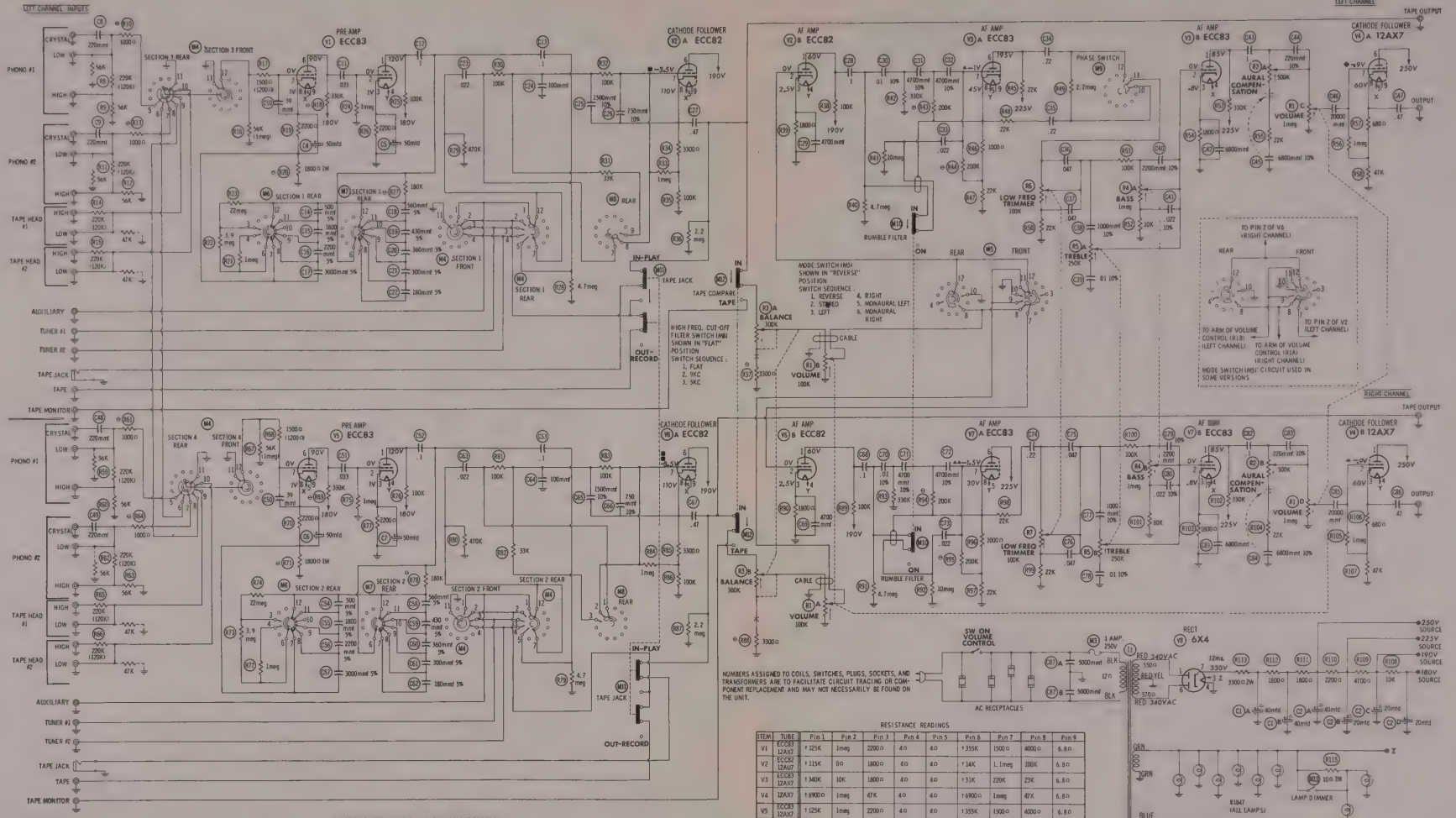
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

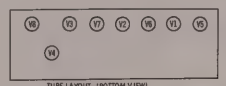
JU519



CHASSIS BOTTOM VIEW - CAPACITOR & MISC IDENT



TUBE LAYOUT (BOTTOM VIEW)



FUNCTION SWITCH (MM) SHOWN IN "AUXILIARY" POSITION
SWITCH SEQUENCE:
1. AUXILIARY
2. TAPE
3. TUNER #1
4. TUNER #2
5. PHONO #1 (STEREO)
6. PHONO #1 (MONAURAL)
7. PHONO #2 (STEREO)
8. PHONO #2 (MONAURAL)
9. TAPE HEAD #1
10. TAPE HEAD #2

⊙ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	↑125K	1meg	2200Ω	4Ω	4Ω	↑355K	1500Ω	4000Ω	6.8Ω
V2	ECC82 12AU7	↑115K	0Ω	1800Ω	4Ω	4Ω	↑14K	1.1meg	100K	6.8Ω
V3	ECC83 12AX7	↑340K	10K	1800Ω	4Ω	4Ω	↑31K	220K	23K	6.8Ω
V4	12AX7	↑6900Ω	1meg	47K	4Ω	4Ω	↑6900Ω	1meg	47K	6.8Ω
V5	ECC83 12AX7	↑125K	1meg	2200Ω	4Ω	4Ω	↑355K	1500Ω	4000Ω	6.8Ω
V6	ECC82 12AU7	↑115K	0Ω	1800Ω	4Ω	4Ω	↑14K	1.1meg	100K	6.8Ω
V7	ECC83 12AX7	↑340K	10K	1800Ω	4Ω	4Ω	↑9100Ω	220K	23K	6.8Ω
V8	6X4	550Ω	NC	.2Ω	0Ω	NC	570Ω	¶		

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 7 OF V8.
■ MEASURED FROM PIN 8 OF V2.
▲ MEASURED FROM PIN 8 OF V3.
NC NO CONNECTION
● MEASURED FROM PIN 3 OF V4.
◆ MEASURED FROM PIN 8 OF V4.
●● MEASURED FROM PIN 8 OF V6.
▲▲ MEASURED FROM PIN 8 OF V7.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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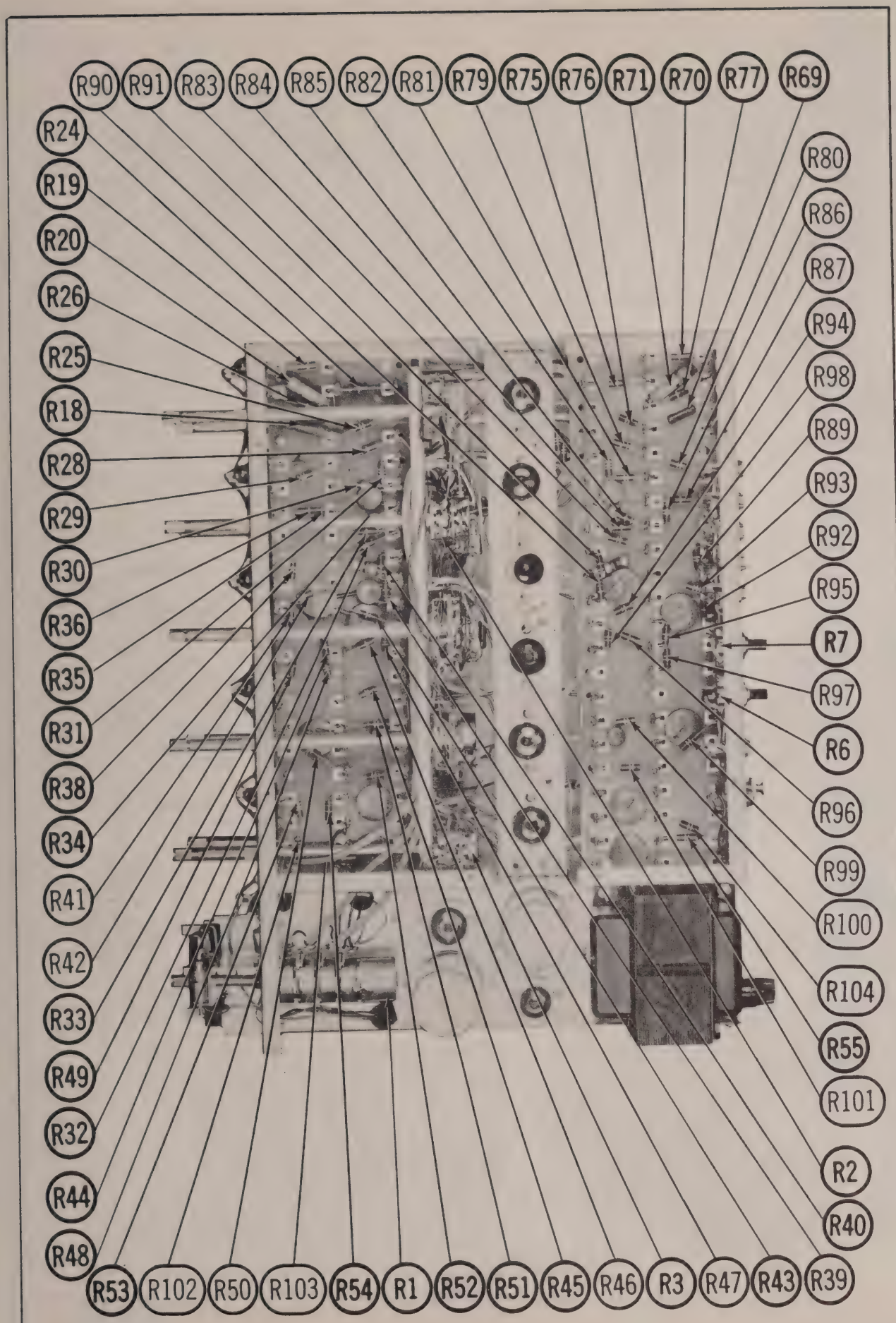
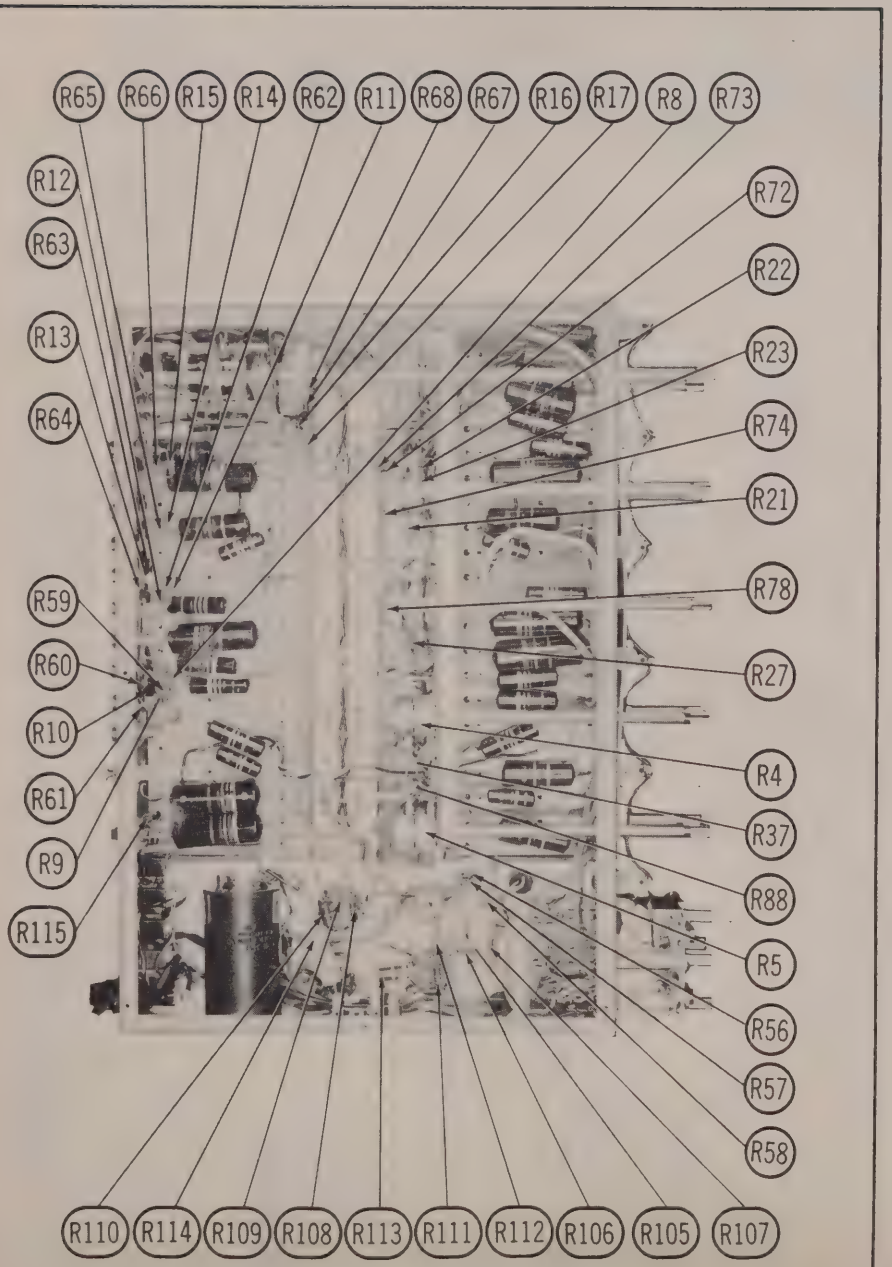
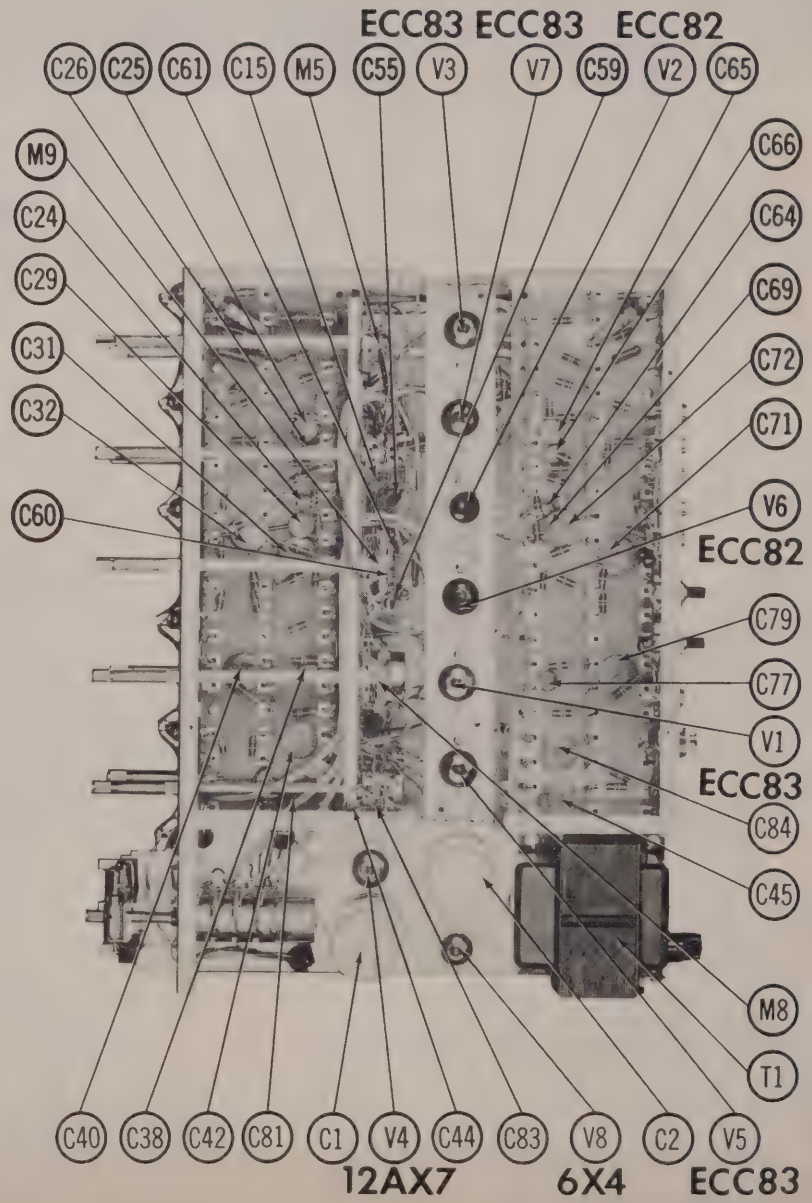
MCINTOSH MODEL C20



CHASSIS TOP VIEW-RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW—RESISTOR IDENTIFICATION



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel Preamp.	ECC83/12AX7	V5	Right Channel Preamp.	ECC83/12AX7
V2	Left Channel Cathode Follower - AF Amp.	ECC82/12AU7	V6	Right Channel Cathode Follower - AF Amp.	ECC82/12AU7
V3	Left Channel AF Amp.	ECC83/12AX7	V7	Right Channel AF Amp.	ECC83/12AX7
V4	Left Channel Cathode Follower - Right Channel Cathode Follower	12AX7 (12AU7)*	V8	Rectifier	6X4

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	McINTOSH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	350		AFH2-40	B0320	FP176	TMD-38	TVL-2630	
B	▲40	350				TC78			
C2A	▲40	350		AFH4-04	D0032	FP420.35	TMT-34	TVL-4635	
B	■20	350					TD-40-350		
C	▲20	300							
D	20	300							
C3	2000	15		AFH1-03	A0070	WP041	TMS-5	TVL-1168	
C4	50	3		SRE3V50	BBR50-3	TT6X50	TD-50-6	TVA-1100	
C5	50	3		SRE3V50	BBR50-3	TT6X50	TD-50-6	TVA-1100	
C6	50	3		SRE3V50	BBR50-3	TT6X50	TD-50-6	TVA-1100	
C7	50	3		SRE3V50	BBR50-3	TT6X50	TD-50-6	TVA-1100	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	220			DI-220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C9	220			DI-220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C10	39			DI-39	DD-390	L10Q39	CCD-390	GP439	5GA-Q39
C11	.033	400V		P488N-033	DD-303	CUB4S33	4DP-2-333	GEM-4133	4TM-S33
C12	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C13	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C14	500	5%		1469-0005		5R5T5	CM-19B-501J	MCE245	MS-35
C15	1800	5%		1464-0018		1R5D18	CM-19B-182J	MCJ456.5	MS-218
C16	2200	5%		1464-0022		1R5D22	CM-19B-222J	MCJ459	MS-222
C17	3000	5%		1464-003		1R5D3	CM-19B-302J	MCE461	MS-23
C18	560	5%		1469-00056		1R5T56	CM-19B-561J	MCJ247	MS-356
C19	430	5%		1469-00043		5R5T43	CM-19B-431J		MS-343
C20	360	5%		1469-00036		22R5T36	CM-19B-361J		MS-336
C21	300	5%		1469-0003	TCZ-300	22R5T3	CM-19B-301J	MCE241	MS-33
C22	180	5%		1469-00018	TCZ-180	22R5T18	CM-19B-181J	CNO-318	MS-318
C23	.022	200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C24	100			SI 100	D6-101	L10T1	CCD-101	GP310	5GA-T10
C25	1500	10%		DI-1500	DD-152	1R5D15	CCD-152	GP215	10TS-D15
C26	750	10%		DI-750	DD-751	1R5T75	CCD-751	GP375	10TS-T75
C27	.47	200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C28	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C29	4700			BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C30	.01	200V	10%	V84C2S1-10%		PM4S1	4DP-1-103	GEM1611	4TM-S1
C31	4700		10%	DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C32	4700		10%	DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C33	.022	200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C34	.22	400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C35	.22	200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C36	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C37	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C38	1000	10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C39	.01	200V 10%		V84C2S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C40	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C41	.022	200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-16122	2TM-S22
C42	6800			BPD-0068	DD-682	BYA10D68	CCD-682	GP268	5HK-D68
C43	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C44	220	10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C45	6800	10%		DI-6800		PM6D68	CCD-682	GEM-16268	10TS-D68
C46	20000			BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C47	.47	200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C48	220			DI-220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C49	220			DI-220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C50	39			DI-39	DD-390	L10Q39	CCD-390	GP439	5GA-Q39
C51	.033	400V		P488N-033	DD-03	CUB4S33	4DP-2-333	GEM-4133	4TM-S33
C52	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C53	.1	200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C54	500	5%		1469-0005		5R5T5	CM-19B-501J	MCE245	MS-35
C55	1800	5%		1464-0018		1R5D18	CM-19B-182J	MCJ456.5	MS-218
C56	2200	5%		1464-0022		1R5D22	CM-19B-222J	MCJ459	MS-222
C57	3000	5%		1464-003		1R5D3	CM-19B-302J	MCE461	MS-23
C58	560	5%		1469-00056		1R5T56	CM-19B-561J	MCJ247	MS-356
C59	430	5%		1469-00043		22R5T43	CM-19B-431J		MS-343
C60	360	5%		1469-00036		22R5T36	CM-19B-361J		MS-336
C61	300	5%		1469-0003	TCZ-300	22R5T3	CM-19B-301J	MCE241	MS-33
C62	180	5%		1469-00018	TCZ-180	22R5T18	CM-19B-181J	CNO-318	MS-318
C63	.022	200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C64	100			SI 100	D6-101	L10T1	CCD-101	GP310	5GA-T10
C65	1500	10%		DI-1500	DD-152	1R5D15	CCD-152	GP215	10TS-D15
C66	750	10%		DI-750	DD-751	1R5T75	CCD-751	GP375	10TS-T75
C67	.47	200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C68	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C69	4700			BPD-0047	DD-472	BYA10D47M	CCD-472	GO247	5HK-D47
C70	.01	200V 10%		V84C2S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C71	4700	10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C72	4700	10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C73	.022	200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	2TM-S22
C74	.22	200V		P288N-22		CUB2P22	2DP-5-224	GEM-2022	2TM-P22
C75	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C76	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C77	1000	10%		DI-1000	DD-102	PM6D1	CCD-102	GP210	10TS-D10
C78	.01	200V 10%		V84C2S1-10%		PM4S1	4DP-1-103	GEM-1611	4TM-S1
C79	2200	10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C80	.022	200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-16122	2TM-S22
C81	6800			BPD-0068	DD-682	BYA10D68	CCD-682	GP268	5HK-D68
C82	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C83	220	10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C84	6800	10%		DI-6800		PM6D68	CCD-682	GEM-16268	10TS-D68
C85	20000			BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C86	.47	200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C87A	5000						CCD-502		
B	5000			BPD-2X0047	DD3-502	BYD6DD5	CCD-502	B2X250	5HK-2D47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	McINTOSH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	100K		C202-R4					Volume, Right Channel
B	100K							Volume, Left Channel
C	1meg							Volume, Left Channel
D	1meg							Volume, Right Channel
E	Switch							

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Mc INTOSH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R2A	500K		C202-R3	B-59				Aural Comp., Left Channel
B	500K			SR-59 *				Aural Comp., Right Chan.
R3A	300K		C202-R5					Balance, Left Channel
B	300K							Balance, Right Channel
R4A	1meg		C202-R1	B-70				Bass, Left Channel
B	1meg			SR-70 *				Bass, Right Channel
R5A	250K		C202-R2	B-51				Treble, Left Channel
B	250K			SR-51 *				Treble, Right Channel
R6A	100K		C202-R6-7	BX-40	A47-100K-S	Q11-128	U41	Low Freq. Trim, Left Chan.
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	
R7A	100K		C202-R6-7	BX-40	A47-100K-S	Q11-128	U41	Low Freq. Trim, Right Channel
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

* Use Coupler AK-16

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	McINTOSH PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .38A	680VCT @ .012A	6.3V @ 1.3A	M-199						
	SEC. 3	SEC. 4	SEC. 5							
	25VCT @ 1.1A									

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	McINTOSH PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	1.1A	①			F-2 ①		① Silicon Type
M2	1.1A	①			F-2 ①		

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	220K	(120K) *
R9	56K	
R10	1000Ω	Note 1
R11	220K	(120K) *
R12	56K	
R13	1000Ω	Note 1
R14	220K	(120K) *
R15	220K	(120K) *
R16	56K	(1meg) *
R17	1500Ω	(1200Ω) *
R18	330K	Note 1
R19	2200Ω	
R20	1800Ω 1W	Note 1
R21	1meg	
R22	3.9meg	
R23	22meg	
R24	1meg	
R25	100K	
R26	2200Ω	
R27	180K	Note 1
R28	4.7meg	
R29	470K	
R30	100K	
R31	33K	
R32	100K	
R33	1meg	
R34	3300Ω	
R35	100K	
R36	2.2meg	
R37	3300Ω	Note 2
R38	100K	
R39	1800Ω	
R40	4.7meg	
R41	10meg	
R42	330K	
R43	200K	Note 1

ITEM No.	RATING	REMARKS
R44	200K	Note 1
R45	22K	
R46	1000Ω	
R47	22K	
R48	22K	
R49	2.2meg	
R50	22K	
R51	100K	
R52	10K	
R53	330K	
R54	1800Ω	
R55	22K	
R56	1meg	
R57	680Ω	
R58	47K	
R59	220K	(120K) *
R60	56K	
R61	1000Ω	Note 1
R62	220K	(120K) *
R63	56K	
R64	1000Ω	Note 1
R65	220K	(120K) *
R66	220K	(120K) *
R67	56K	(1meg) *
R68	1500Ω	(1200Ω) *
R69	330K	Note 1
R70	2200Ω	
R71	1800Ω 1W	Note 1
R72	1meg	
R73	3.9meg	
R74	22meg	
R75	1meg	
R76	100K	
R77	2200Ω	
R78	180K	Note 1
R79	4.7meg	

ITEM No.	RATING	REMARKS
R80	470K	
R81	100K	
R82	33K	
R83	100K	
R84	1meg	
R85	3300Ω	
R86	100K	
R87	2.2meg	
R88	3300Ω	Note 2
R89	100K	
R90	1800Ω	
R91	4.7meg	
R92	10meg	
R93	330K	
R94	200K	Note 1
R95	200K	Note 1
R96	1000Ω	
R97	22K	
R98	22K	
R99	22K	
R100	100K	
R101	10K	
R102	330K	
R103	1800Ω	
R104	22K	
R105	1meg	
R106	680Ω	
R107	47K	
R108	10K	
R109	4700Ω	
R110	2200Ω	
R111	1800Ω	
R112	1800Ω	
R113	3300Ω 2W	
R114	2Ω 10W	
R115	10Ω 1W	

Note 1. Select for low noise and close tolerance.
Note 2. Not used in some versions.

* Alternate Value

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			McINTOSH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	1A 250V			312001 (3AG 1A 250V)	342001	AGC 1	HKP

MISCELLANEOUS

ITEM No.	PART NAME	McINTOSH PART No.	NOTES
M4	Switch		Function (Input Selector)
M5	Switch		Mode
M6	Switch		Bass Compensating
M7	Switch		Treble Compensating
M8	Switch		HF Cut-Off Filter
M9	Switch		Phase
M10	Switch		Rumble Filter (Pushbutton Type)
M11	Switch		Tape Jack (Pushbutton Type)
M12	Switch		Tape Compare (Pushbutton Type)
M13	Switch		Pilot Light Dimmer

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

PHILCO MODEL G-747

PHILCO MODEL G-747

PHILCO MODEL G-747

TRADE NAME	Philco Model G-747
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pennsylvania
TYPE SET	AC Operated 4 Tube AM Receiver With Electric Clock
POWER SUPPLY	105-120 Volts AC, 60 Cycles
RATING	25 Watts, .27 Amp. @ 117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A3, A4 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

To prevent oscillations, move C4 lead toward tube socket. To increase gain move lead away from tube socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 1 (grid) of Converter. Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.		Loop	1620KC	"	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	Tune to 1400KC signal	"	A4	Adjust for maximum output while rocking tuning gang.

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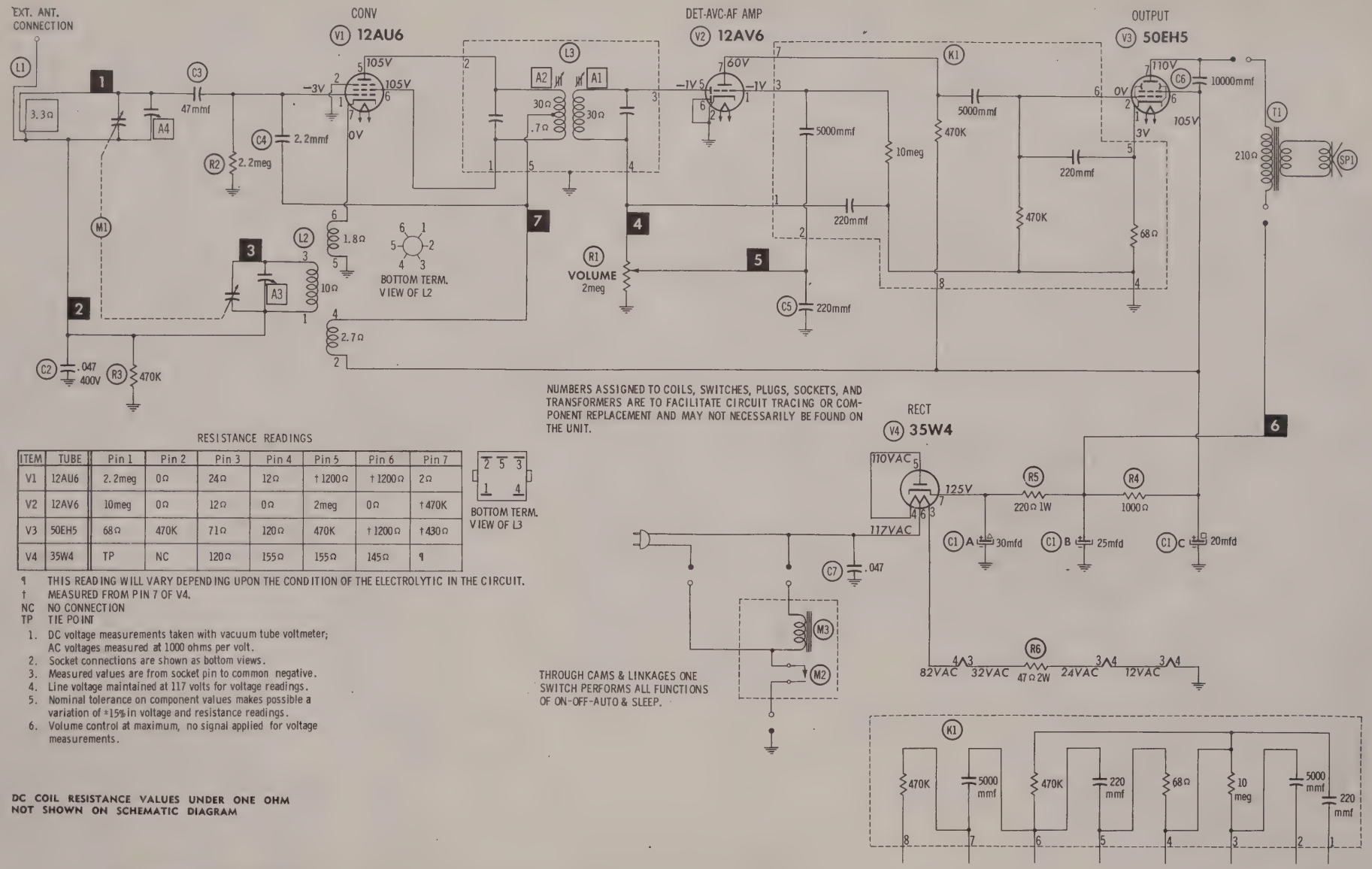
JG515

SET 475 FOLDER 5



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	2.2meg	0Ω	24Ω	12Ω	†1200Ω	†1200Ω	2Ω
V2	12AV6	10meg	0Ω	12Ω	0Ω	2meg	0Ω	†470K
V3	50EH5	68Ω	470K	71Ω	120Ω	470K	†1200Ω	†430Ω
V4	35W4	TP	NC	120Ω	155Ω	155Ω	145Ω	¶

BOTTOM TERM. VIEW OF L3

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V4.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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PHILCO MODEL G-747

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	12AU6	V3	Output	50EH5
V2	Det. - AVC - AF Amp.	12AV6	V4	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲30	150	30-2585-11	PWH3-05-50	C0080 ‡	PFP311.63		PCL-3455	
B	25	150							
C	■20	150							

‡ Use printed circuit adaptor #55277 and 55278.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	47		SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C4	2.2		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C5	220		SI 220	DD-221	L10T22	CCD-221	GP322	5GA-T22
C6	10000		BPD-01	DD-103	BYA10D1	CCD-103	GP210	5HK-S10
C7	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2meg	½	33-5575-18					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2.2meg	
R3	470K	

ITEM No.	RATING	REMARKS
R4	1000Ω	
R5	220Ω 1W	

ITEM No.	RATING	REMARKS
R6	47Ω 2W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	PHILCO PART No.	REPLACEMENT DATA
K1	Audio Coupling	(2) 220mmf, (2) 5000mmf, 68Ω, (2) 470K, 10meg	30-6500-2	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Antenna	32-4768-2						
L2	Osc. Coil	32-4776-1						
L3	IF Trans.	32-4627-3						

PRINTED BOARD

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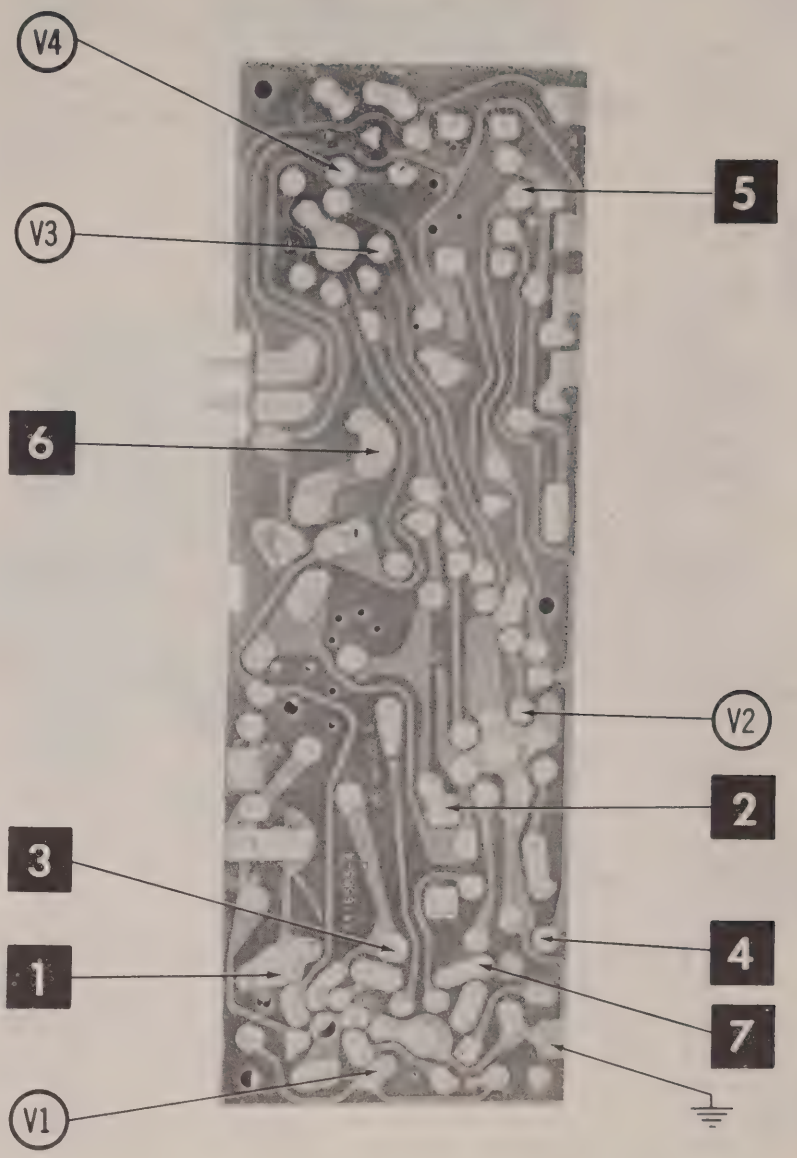
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2400Ω	3-4Ω	32-8384-2	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	36-1675-9	4A1R	

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M1	Tuning Cap.	31-2790-3	2 Gang
M2	Switch		Auto-On-Off (Part of Clock)
M3	Clock	41-2068	
	Printed Board	54-6585-4	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-6624-11	Tuning
Knob	54-6624-12	Volume
Knob	54-6436-2	Clock
Clock Crystal	54-6713-2	
Clock Dial	54-5379-3	
Cabinet	51-0017	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

DISASSEMBLY INSTRUCTIONS

CHASSIS

1. Remove 4 screws from back. Remove back. (Speaker is mounted on back).
2. Unsolder 2 antenna leads.
3. Remove knobs.
4. Remove rear mounting bracket screw. Remove bracket.
5. Slide chassis from cabinet.

CLOCK

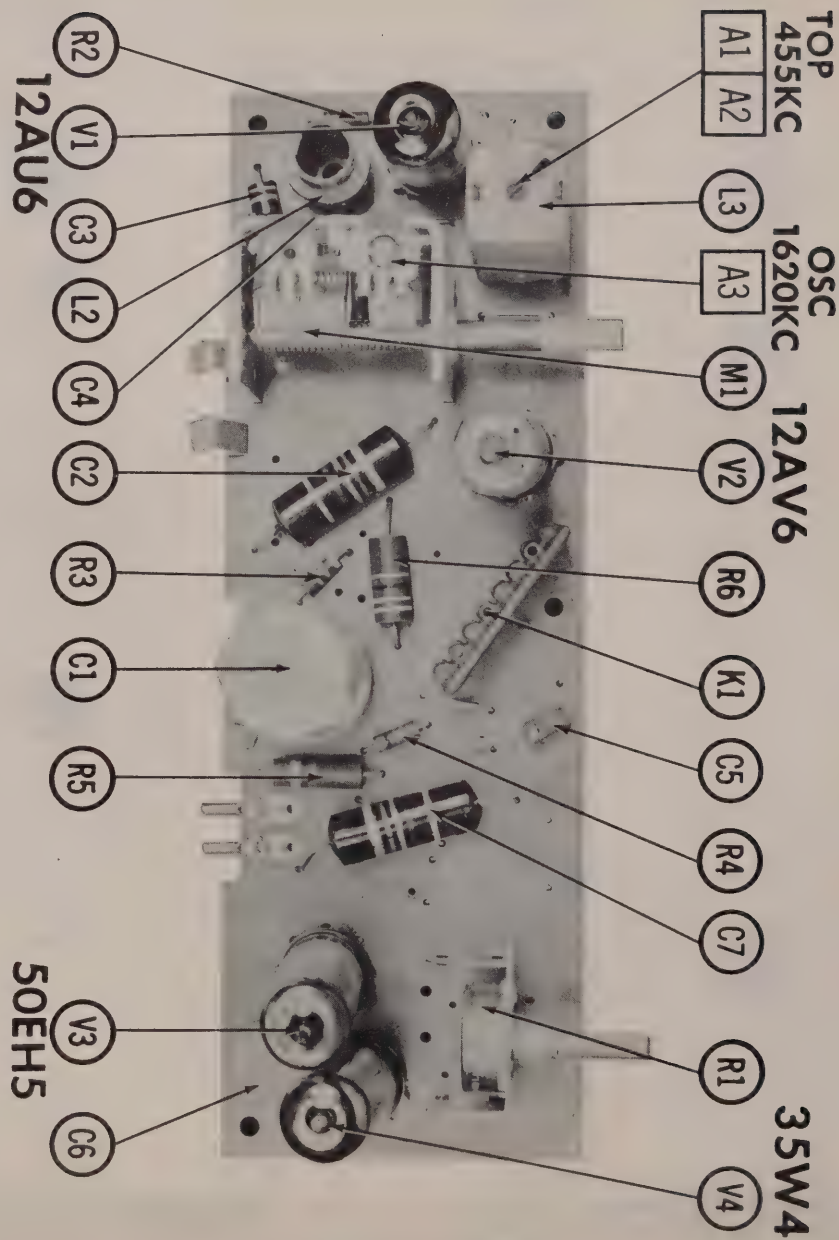
Note: Clock motor is replaceable without clock removal by removing 2 magnet mounting screws.

1. Remove clock knobs.
2. Carefully pry top of clock crystal free. Remove crystal.
3. Remove hands by pulling straight off shaft.
4. Remove chassis. (See "Chassis Disassembly").
5. Unsolder 3 clock leads.
6. Remove 4 mounting fasteners.
7. Tilt clock top back and slide up. Remove clock.

TO REPLACE HANDS

1. Set clock in "Auto".
2. Push in alarm set shaft and turn until switch just closes.
3. Install all hands at 12 o'clock.

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PHILCO
MODEL T-50

PHILCO
MODEL T-50

PHILCO
MODEL T-50

TRADE NAME	Philco Model T-50
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	5.2 Volts DC
TUNING RANGE—BROADCAST	535 – 1620KC
RATING	18MA @ 5.2 Volts DC (No Signal, Min. Volume) 20MA @ 5.2 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2..... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537
A3, A4..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to antenna stator lug of tuning gang. Low side to chassis.	455KC (400% Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output.
2.		Loop	1620KC	"	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A4	"
4.		"	600KC	Tune to 600KC signal	"	A5	Adjust for maximum output while rocking tuning gang.

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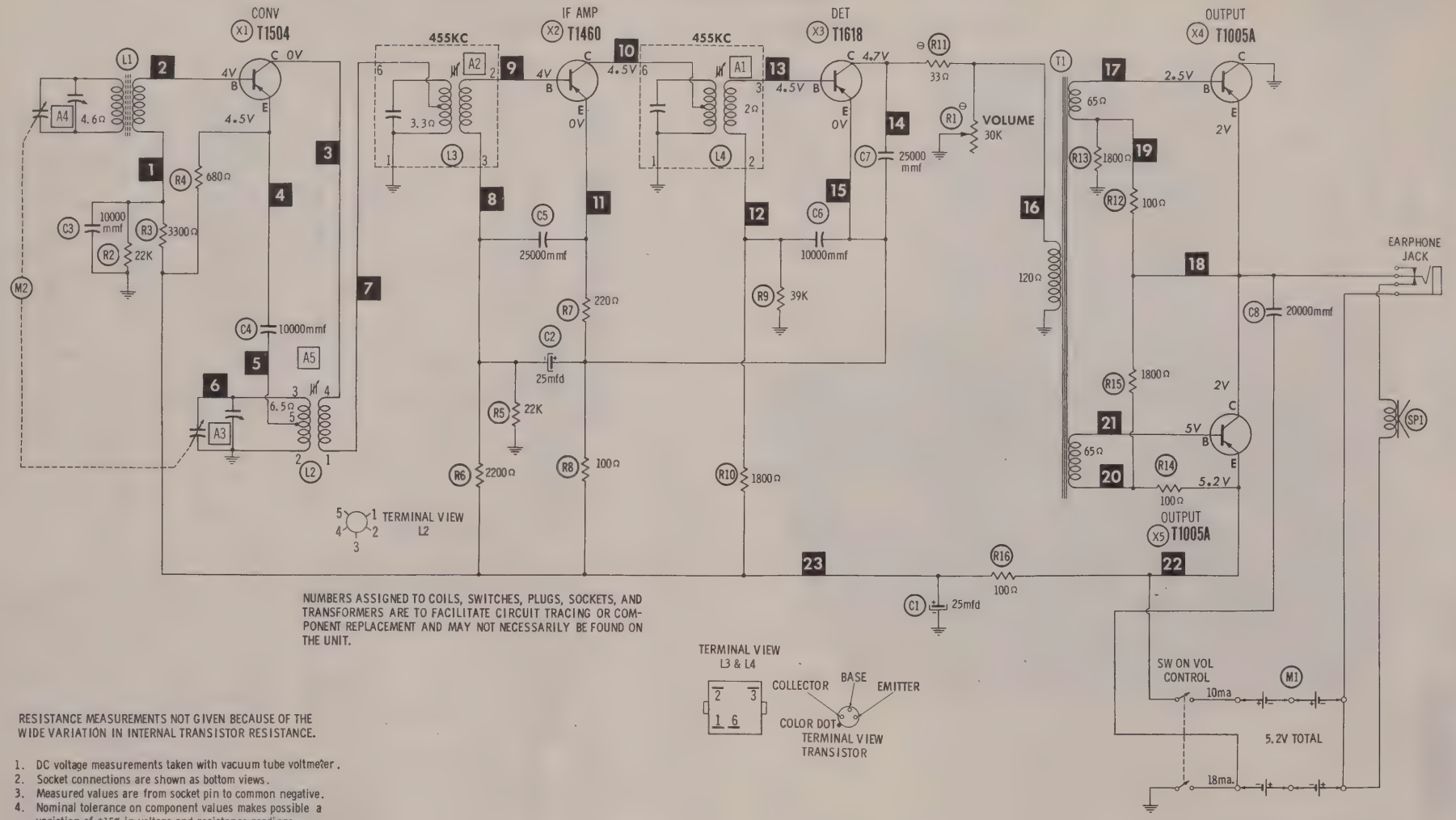
JF514

SET 475 FOLDER 6



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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PHILCO
MODEL T-50

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	T1504	Converter					PNP
X2	T1460	IF Amplifier					PNP
X3	T1618 *	Detector		2N410			PNP
X4	T1005A †	Output		2N408	2N632		PNP } Matched
X5	T1005A †	Output		2N408	2N632		PNP } Pair

* Some versions may use a T1460 red dot in this application.
† Some versions may use a T-1009A or T1624 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	25	6	30-2599-36	BCD6025	ECPB411		ML30-6	VL-1090	
C2	25	6	30-2599-36	BCD6025	ECPB411		ML30-6	VL-1090	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	25000		BPD-03	DD-303	BYB6S3	CCD-303	TA-125	5HK-S25
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C7	25000		BPD-03	DD-303	BYB6S3	CCD-303	TA-125	5HK-S25
C8	20000		BPD-02	DD-203	BYB6S2	CCD-203	TA-120	5HK-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	30K	1/4	33-5583-10①					Volume & Switch

① Part #33-5583-8 (100K) used in Run 50 versions.
Part #33-5583-8-10 (30K) used in Run 51 versions.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	22K	
R3	3300Ω	
R4	680Ω	
R5	22K	
R6	2200Ω	

ITEM No.	RATING	REMARKS
R7	220Ω	
R8	100Ω	
R9	39K	
R10	1800Ω	
R11	33Ω	

ITEM No.	RATING	REMARKS
R12	100Ω	
R13	1800Ω	
R14	100Ω	
R15	1800Ω	
R16	100Ω	

PRINTED BOARD

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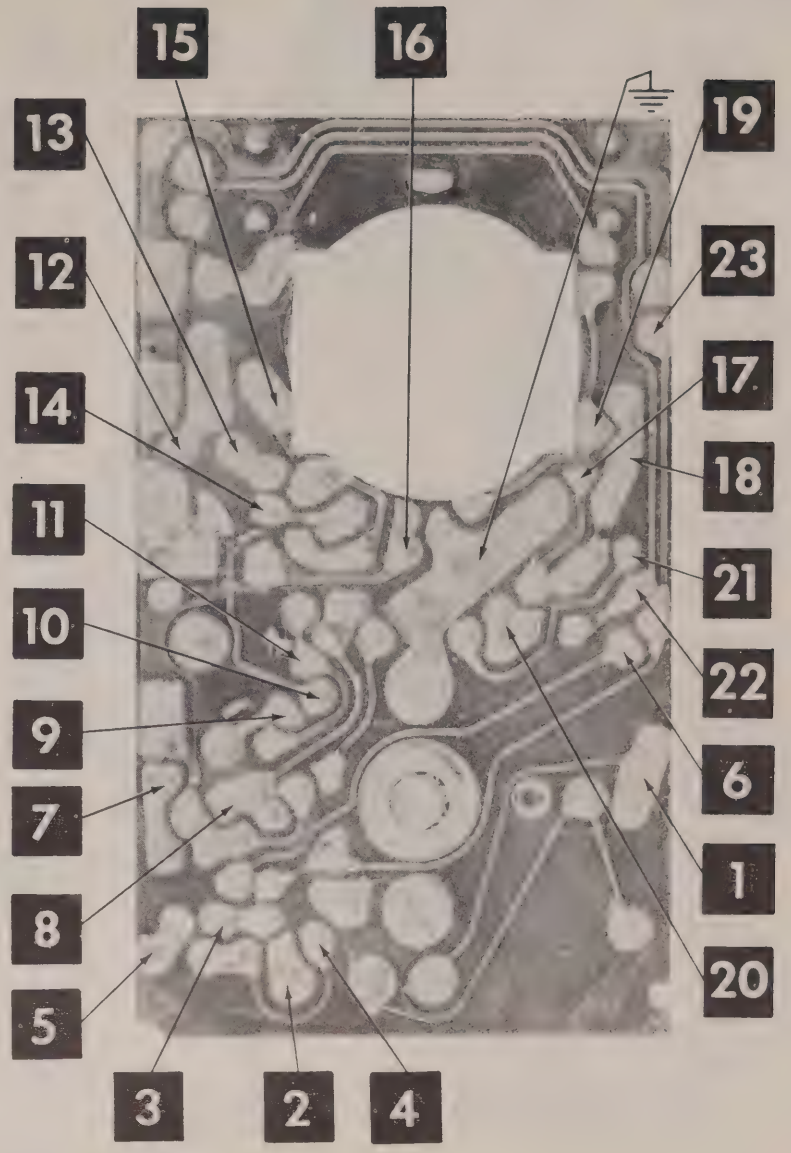


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		PHILCO PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	76-10982						
L2	Osc. Coil	32-4669-6						
L3	Input IF	32-4775-4						
L4	Output IF	32-4775-5						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1 SEC. 2 1	32-8911-1						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	2 1/4"	PM	98-102Ω	36-1684-1	22A06Z100	

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.3V	P640				E640		RM-640R	① 4 Required

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Tuning Cap Printed Board	31-2788-3 54-6968	2 Gang

CABINETS & CABINET PARTS

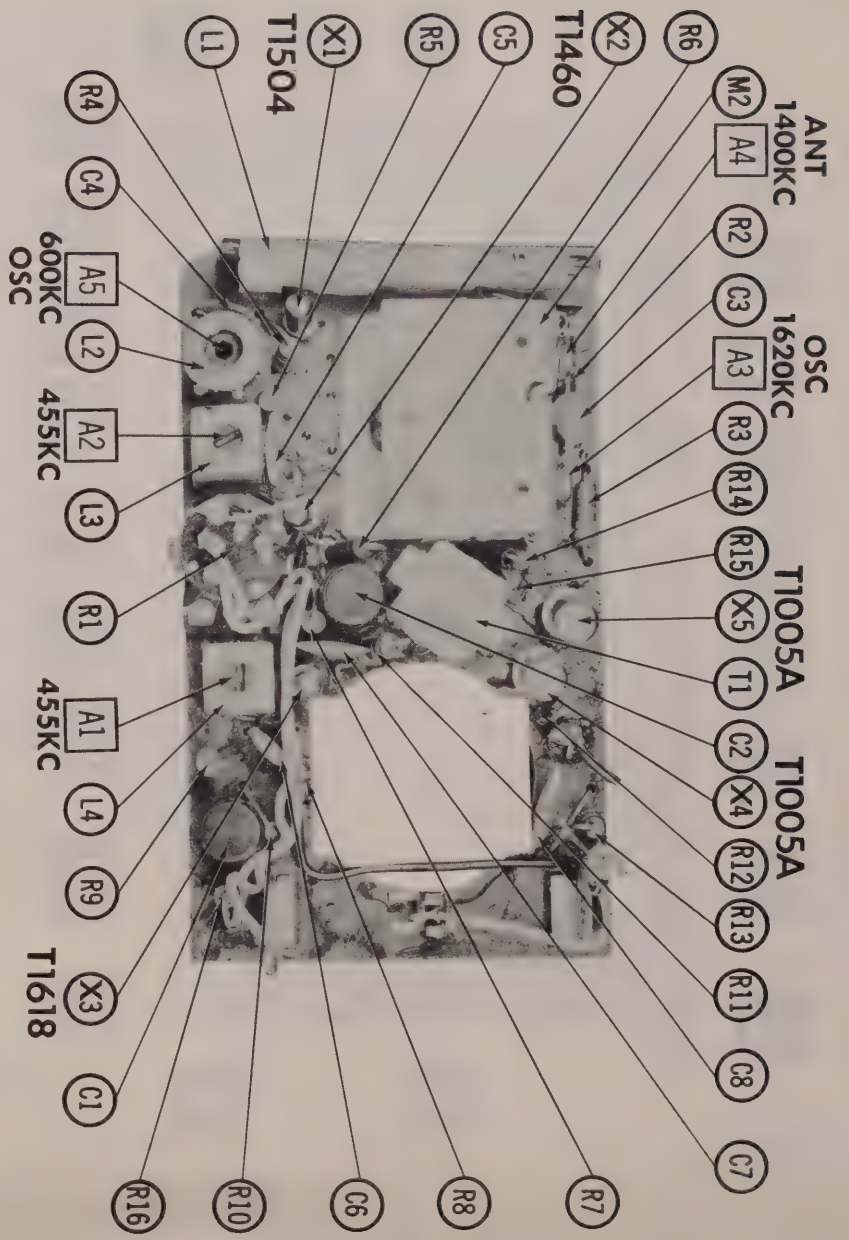
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-6959	Tuning
Knob	54-6958	Volume
Cabinet	54-6956	
Cabinet Front	54-6955	Aqua
Cabinet Front	54-6955-1	Terra, Cotta
Door	54-6957	Battery Compartment

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RCA VICTOR MODELS RP-211-1, RP-211-3, RP-212-1, RP-212-2

RCA VICTOR MODELS RP-211-1, RP-211-3, RP-212-1, RP-212-2

MODEL RP-211-1

RCA VICTOR MODELS RP-211-1, RP-211-3, RP-212-1, RP-212-2

GENERAL INFORMATION

RCA RP-211 and RP-212 Series record changers are four-speed mechanisms designed to play, in automatic sequence, a stack of 7-, 10-, or 12-inch records. These changers will shut off automatically after playing the last record.

Records are separated by the movement of a finger in the center spindle. This finger directly separates records with a 1/4-inch center hole. It also actuates the knives and shelves of the center post used for playing 45-rpm records with a 1 1/2-inch center hole.

The tripping method used is the velocity type. In this method, the trip slide lever causes a trip pawl to engage a projection on the turntable hub and start the mechanism into cycle. If the record being played causes the pickup arm to move inward at a constant rate without acceleration, a point will be reached at which a constant-diameter trip is effected.

Connect these changers to an outlet supplying 117 volts, 60 cycles AC only.

Manufactured by:

Radio Corporation of America
RCA Victor Radio and "Victrola" Division
Camden, New Jersey

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SET 475 FOLDER 7

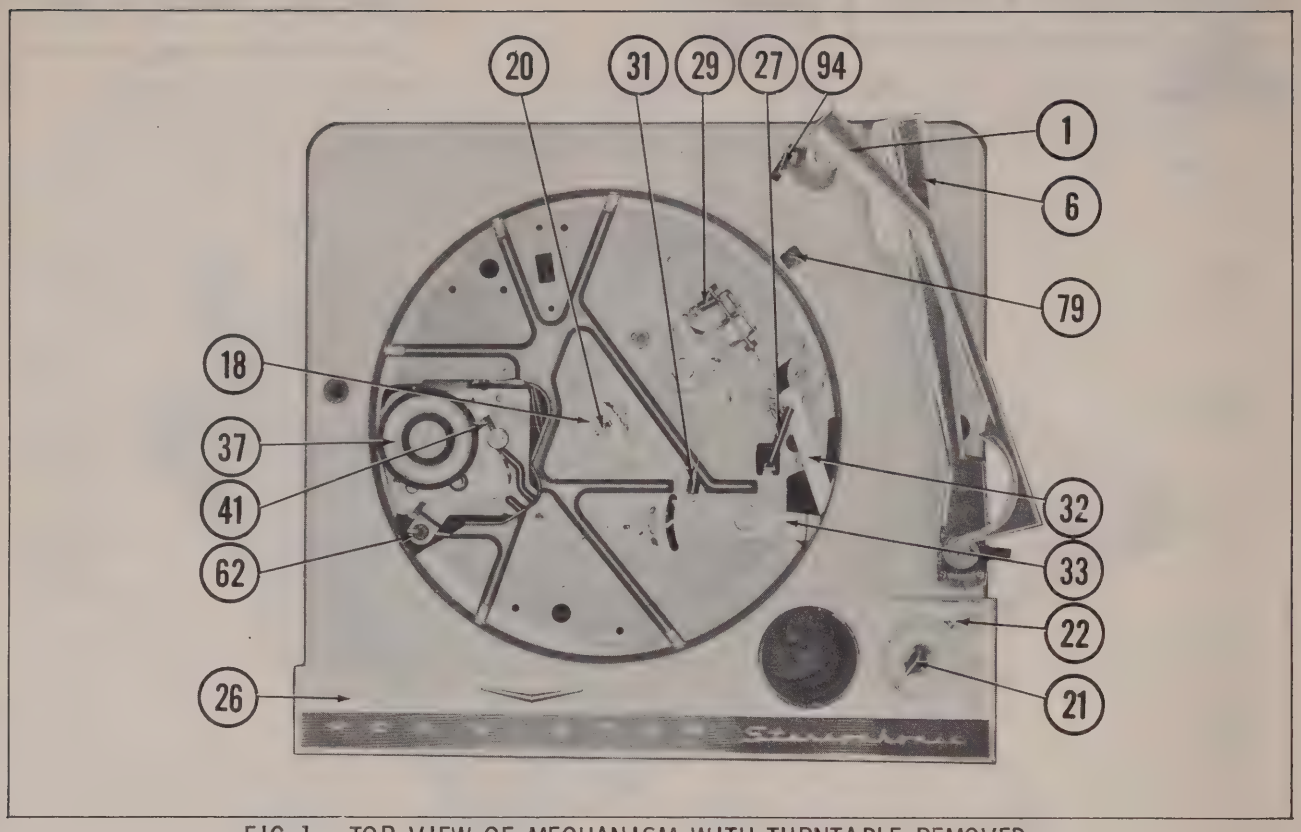


FIG. 1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED.

MODEL IDENTIFICATION

RP-211-1

This changer is equipped with a stereophonic pickup (Stock No. 196960A) and stylus assembly (Stock No. 108215). The stylus assembly includes a 3-mil synthetic sapphire and a 0.7-mil diamond. The unit has a storage well for the 45-rpm center post. The pickup arm is charcoal with gold trim.

RP-212-2

This changer is equipped with a stereophonic pickup (Stock No. 108213A) and stylus assembly (Stock No. 108214). The stylus assembly includes a 3-mil synthetic sapphire and a 0.7-mil diamond. The pickup arm is champagne white.

RP-211-3, RP-212-1

This changer is equipped with a stereophonic pickup (Stock No. 196960A) and stylus assembly (Stock No. 108215). The stylus assembly includes a 3-mil synthetic sapphire and a 0.7-mil diamond. The pickup arm is champagne white.

OPERATING INSTRUCTIONS

Loading

1. Pull the stabilizer arm straight up until it clears the spindle. Swing the stabilizer to the right until the pin in the shaft of the stabilizer arm drops into the locating groove.

   NOTE: 16 2/3-, 33 1/3-, 45-, and 78-rpm records cannot be intermixed. The Speed Control knob must be reset for each type of record.

2. Place the records on the spindle, and lower them to the offset shelf. Hold the records level, and replace the stabilizer arm over the spindle.

Starting

Before starting the changer, make sure the stylus and Speed Control knob are in the position corresponding to the type of record to be played. To start the changer, turn the On-Off-Reject control to Reject, and release it. The changer will operate automatically until the last record has been played. At this time, the pickup arm will return to its rest post, and the supply to the motor will switch off.

Rejecting

To reject a record at any time while the changer is operating, turn the On-Off-Reject control to Reject, and release it.

Stopping

The changer can be stopped at any time while a record is playing, by turning the On-Off-Reject knob to Off. The pickup arm should then be lifted and placed on the rest.

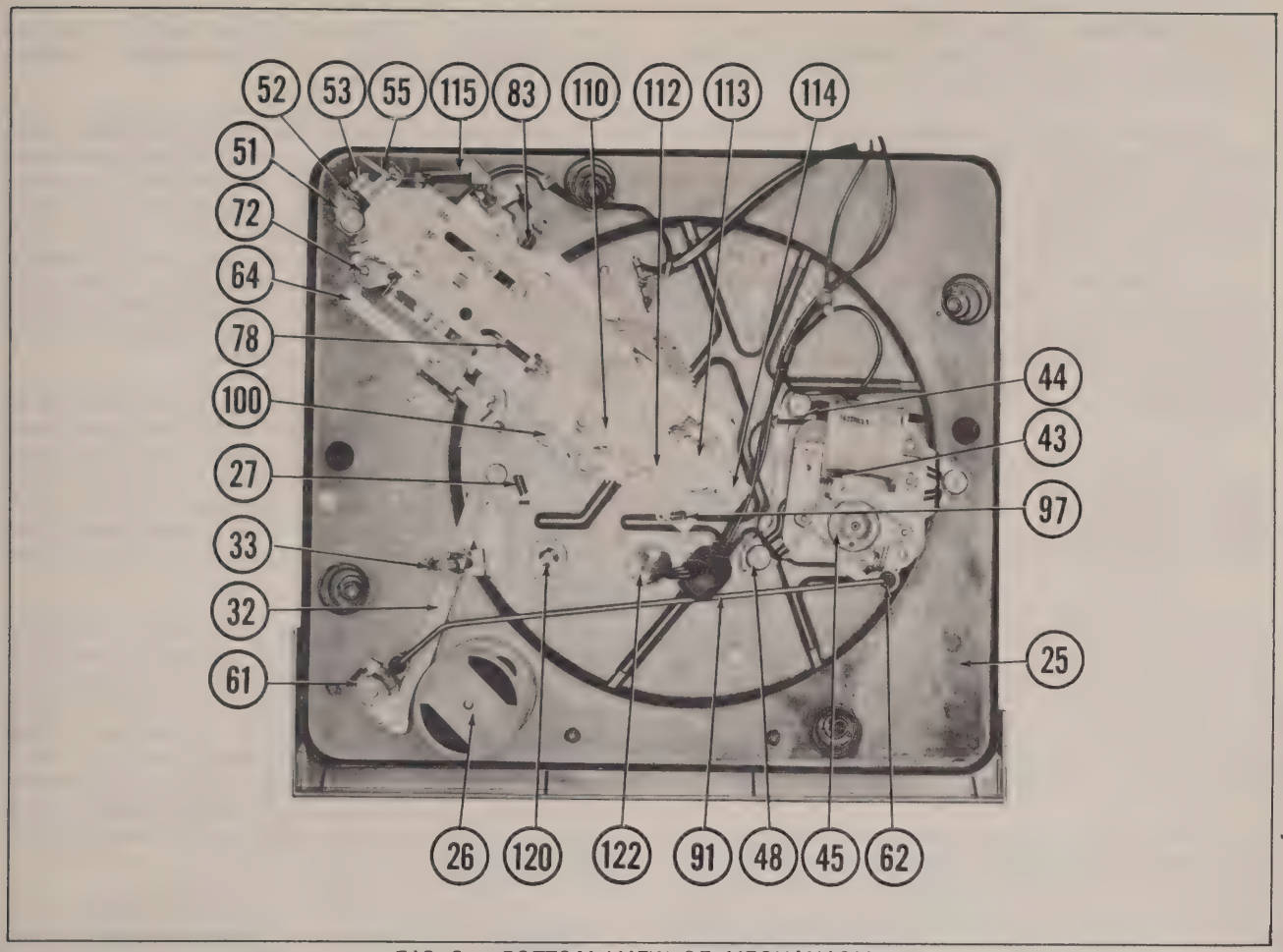


FIG. 2 BOTTOM VIEW OF MECHANISM.

NOTE: When not planning to use the changer for a long time, turn the Speed Control knob to the N position (midway between 45 and 78). This will remove the force of the motor shaft against the idler wheel, and thus prevent flat spots from forming on the wheel.

Unloading

Lift the stabilizer arm clear of the spindle, and swing it out over the pickup arm. Using both hands and with the fingers under the edge of the bottom record, lift the records straight up and off the spindle.

Using the 45-Rpm Center Post

The removable center post is for use with 16 2/3- or 45-rpm records having the large center hole. Place the center post over the center spindle, with the word "Front" facing the front. When placing or removing the center post, be careful not to damage the smaller spindle.

A well is provided on the Model RP-211-1 for storage of the center post when not in use. Firmly secure the center post, after placing it in the well, by pushing it down. The shelves of the center post will engage the projections inside the well.

CHANGE CYCLE

Observe the change cycle by manually rotating the turntable. The following action can then be readily observed, and the function of each part more easily understood. In this explanation of the change cycle, the mechanism is assumed to have stopped automatically with the pickup arm resting on the rest post.

To start the unit into automatic cycling, first move the On-Off-Reject control to Reject. The movement of this control and its associated levers actuates on-off switch (122) and trip slide lever (86). A force is transmitted to on-off-reject link (32). This link, in turn, actuates on-off-reject control arm (33). The control arm is linked to lever (31A) by wire (31). The wire actuates the lever. The lever then contacts and applies force against turned up lance (86A) of trip slide lever (86). The trip slide is pushed outward, away from the turntable spindle.

Tab (86B) of the trip slide then contacts trip pawl actuating lever (106). As a result, trip engagement pawl (108) is moved into the path of projection (A) on the turntable hub. As the turntable rotates, projection (A) momentarily strikes trip engagement pawl (108). This rotates cycling gear (100) fast enough for its teeth and those on the turntable hub to mesh.

Stud (100A), part of cycling gear (100), extends

through and rides the cross slot in cycling slide (74). As cycling gear (100) rotates, stud (100A) pushes cycling slide (74) toward the pickup arm.

Almost immediately after the slide starts moving outward, pickup arm lift pin (73) rides up the incline on cycling slide (74). Pickup arm lift pin (73) is forced upward against height adjustment screw (10). This raises the pickup arm from pickup arm rest (49).

At about the same time, cycling gear (100) has rotated far enough for trip pawl actuating lever (106) to slide over the edge of a small piece of metal extending from the bottom of the motorboard. By doing this, trip pawl actuating lever (106) resets itself and thereby prevents the changer from tripping continuously.

As cycling slide (74) continues to move, it contacts music wire (77) (attached to the cycling slide) and bottom stud (72A) on pickup arm lever (72). The lever is thereby rotated, starting the pickup arm on its outward movement.

At this time, top stud (72B) slides over latch (66A) and locks pickup arm return lever (66) to pickup arm lever (72). This locked condition rotates pickup arm lever (72) and pickup arm return lever (66) as a unit, in opposition to the force applied by pickup arm return spring (67). Since the pickup arm is connected to pickup arm lever (72) through the pickup arm shaft, the pickup arm follows.

While pickup arm lever (72) and pickup arm return lever (66) are latched together and cycling slide (74) is approaching the end of its outward travel, stud (74B) (mounted on the cycling slide) contacts pickup arm latch actuating lever (53) and unlatches pickup arm latch lever (51). Pickup arm latch lever (51) must be unlatched; otherwise, the pickup would land in the rest position instead of on the record.

As cycling slide (74) reaches the extreme end of its outward travel, one end of pickup arm lever (72) is pushed against the stud extending from the bottom of the motorboard, while the stud on the other end of the lever remains against music wire spring (77).

Pickup arm lever (72) is held in this wedged position when the pickup arm is in its outermost position. The lever produces a positive stabilizing action for the pickup arm as the record drops to the turntable. To prevent erratic landing, however, latch (66A) must remain latched, so that pickup arm lever (72) and pickup return arm lever (66) remain coupled together as the pickup moves in for a landing.

Just before cycling slide (74) reaches its maximum outward travel, spindle operating arm assembly (110) is actuated by cycling slide projection (74C).

The lower end of the pushoff finger, extending through the hole in spindle operating arm assembly (110), rides along with the arm. Since the pushoff finger is pivoted around a pin driven through the spindle, the upper end of the finger moves and pushes the record off the spindle shelf. A record then drops to the turntable. Retainer (20A) separates the records by blocking the adjacent record and thereby preventing it from being pushed off the spindle shelf. After the record drops to the turntable, cycling slide (74) returns to the out-of-cycle position.

The pickup landing position for 7-, 10-, and 12-inch records is determined by the contact of landing selector lever (82) and the various steps in pickup arm return lever (66).

There is a depression in cycling gear (100). This depression is located near the trip pawl mechanism. It provides a means of indexing for 7-inch records. The end of 10-inch indexing lever (81) drops into the depression as the cam rotates. This causes the other end of the lever to push landing selector lever (82) upward as far as it will go. Pickup arm return lever (66) will then contact landing selector lever (82) on the upper step. The pickup will then land on the start of a 7-inch record.

When either a 10- or a 12-inch record is lying on the turntable, rubber tip (79) of 10-inch indexing lever (81) is prevented from rising, even though the other end of the lever tends to drop into the depression in cycling gear (100). Consequently, landing selector lever (82) is pushed only far enough for pickup arm return lever (66) to contact the second step. The pickup will then land on a 10-inch record.

When a 12-inch record drops to the turntable, the edge of the record strikes 12-inch index lever (94). The other end of the lever rotates 12-inch record indexing lever (84) far enough to permit landing selector lever (82) to drop off the upper tab and land on the lower tab. In this position, landing selector lever (82) will contact the lower step in pickup arm return lever (66). The pickup arm is stopped on its inward travel, so that the pickup will land on the start of a 12-inch record.

On the return travel of cycling slide (74), music wire spring (77) moves away from bottom stud (72A) (on the pickup arm lever). This permits pickup arm lever (72) and pickup arm return lever (66) to direct the inward movement of the pickup arm.

Pickup arm return lever (66) pushes the pickup arm inward until the lever is blocked by landing selector lever (82). Landing selector lever (82) contacts one of three steps formed in pickup arm return lever (66). Each step corresponds to one of three (7-, 10-, or 12-inch records) landing positions.

Pickup arm return lever (66) directs the movement of the pickup arm. The stud (part of the pickup arm return lever) moves away, permitting spring (89) to raise the end of shutoff link (64) enough to clear escape lever (74A). Otherwise, the mechanism would actuate switch (122) and stop the motor.

Just before the pickup sets down on the record, stud (74B) on the extreme end of cycling slide (74) contacts the end of actuating lever (53). This unlatches pickup arm lever (72) from pickup arm return lever (66). The pickup arm becomes free to move at the same time the stylus touches the record. Meanwhile, cycling gear (100) has not quite completed its return.

The remaining short travel causes stud (74B) to carry actuating lever (53) far enough to pull pickup arm return lever (66) away from landing selector lever (82). The stud on pickup arm return lever (66) is then latched to pickup arm latch (66A); it remains latched throughout the playing of the record.

As cycling gear (100) completes its cycle, a stud on top of cycling gear (100) contacts and pulls trip slide lever (86) back into position for the next tripping.

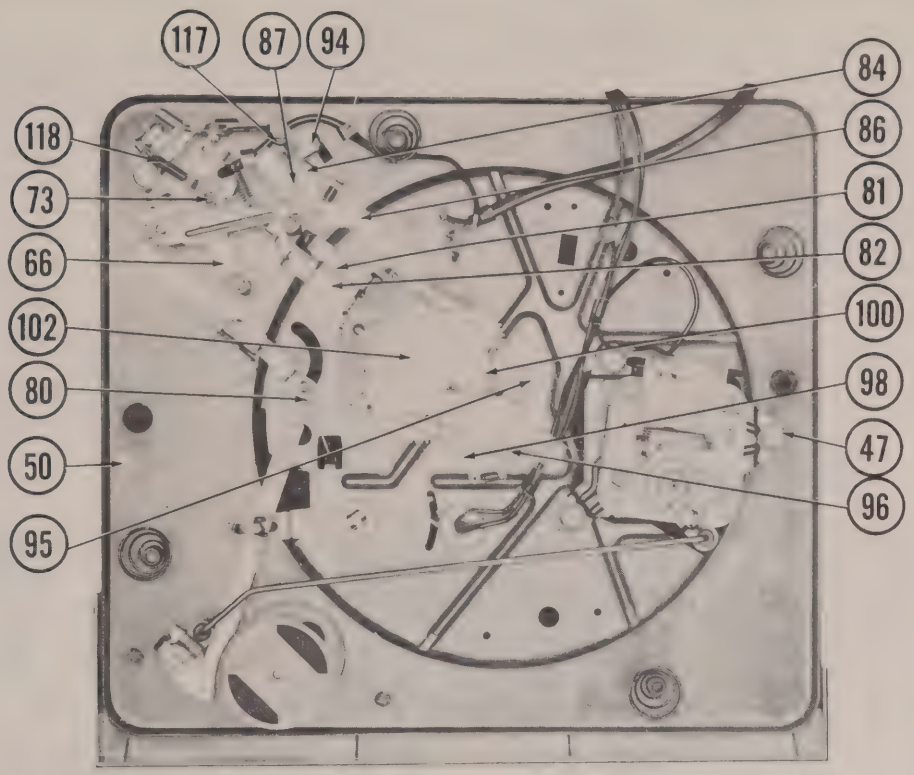


FIG.3 BOTTOM VIEW OF MECHANISM WITH CYCLING SLIDE REMOVED.

The teeth of cycling gear (100) and the turntable hub reach a point where they no longer are meshed. At this time, cycling gear (100) stops rotating.

As the record plays, the pickup moves toward the spindle. Pickup arm lever (72) contacts trip slide lever (86) and pushes it outward, away from the spindle. The other end of the trip slide contacts and moves trip pawl intermediate lever (107). This lever, through a friction clutch arrangement, moves trip engagement pawl (108).

As the record continues to play, the pickup moves in at a constant speed until the sloped side of the engagement pawl lightly touches projection (A) on the turntable hub. This pushes trip engagement pawl (108) backward with each rotation of the turntable, provided the pawl has not moved in so far that it touches the leading edge. If the pickup should accelerate rapidly when it moves inward (as it does when the stylus leaves the recorded section and enters the trip grooves at the end of the recorded material), trip engagement pawl (108) will move inward too far before the turntable has made a complete revolution. Consequently, projection (A) on the turntable hub contacts the side of trip engagement pawl (108). This firm contact rotates cycling gear (100) enough for its teeth and those of the turntable hub to mesh. As a result, a new change cycle is started.

As cycling gear (100) is carrying the mechanism through a cycle, a tab under the motorboard contacts and resets the trip pawl mechanism. This prevents the changer from recycling without playing the next record.

AUTOMATIC SHUTOFF

After the last record has been played, stabilizer arm (1) drops below the offset shelf on spindle (20). Stabilizer arm shaft (117) contacts shutoff lever assembly (115) and forces it downward. The assembly then pivots actuating lever (53) upward.

As the mechanism goes into the change cycle, cycling slide (74) approaches its outermost travel. The knobbed end of stud (74B) slides underneath, but fails to push, actuating lever (53), so that pickup arm latch lever (51) remains latched. Pickup arm return lever (66) is locked in position and cannot direct the pickup arm inward.

The pickup arm will therefore remain directly above the rest. When pickup arm lift pin (73) slides down the incline on cycling slide (74), the pickup arm sets down on pickup arm rest (49); but the turntable continues to rotate for an instant, until the shutoff switch is actuated.

The shutoff switch is actuated when pickup arm return lever (66) is latched. Shutoff link (64) is held in position, so that tab (64A) is down and escape lever (74A) pushes against tab (64A) as cycling slide (74) passes by. When these two parts meet, the motion is transferred to on-off-reject link (32) and on-off-reject

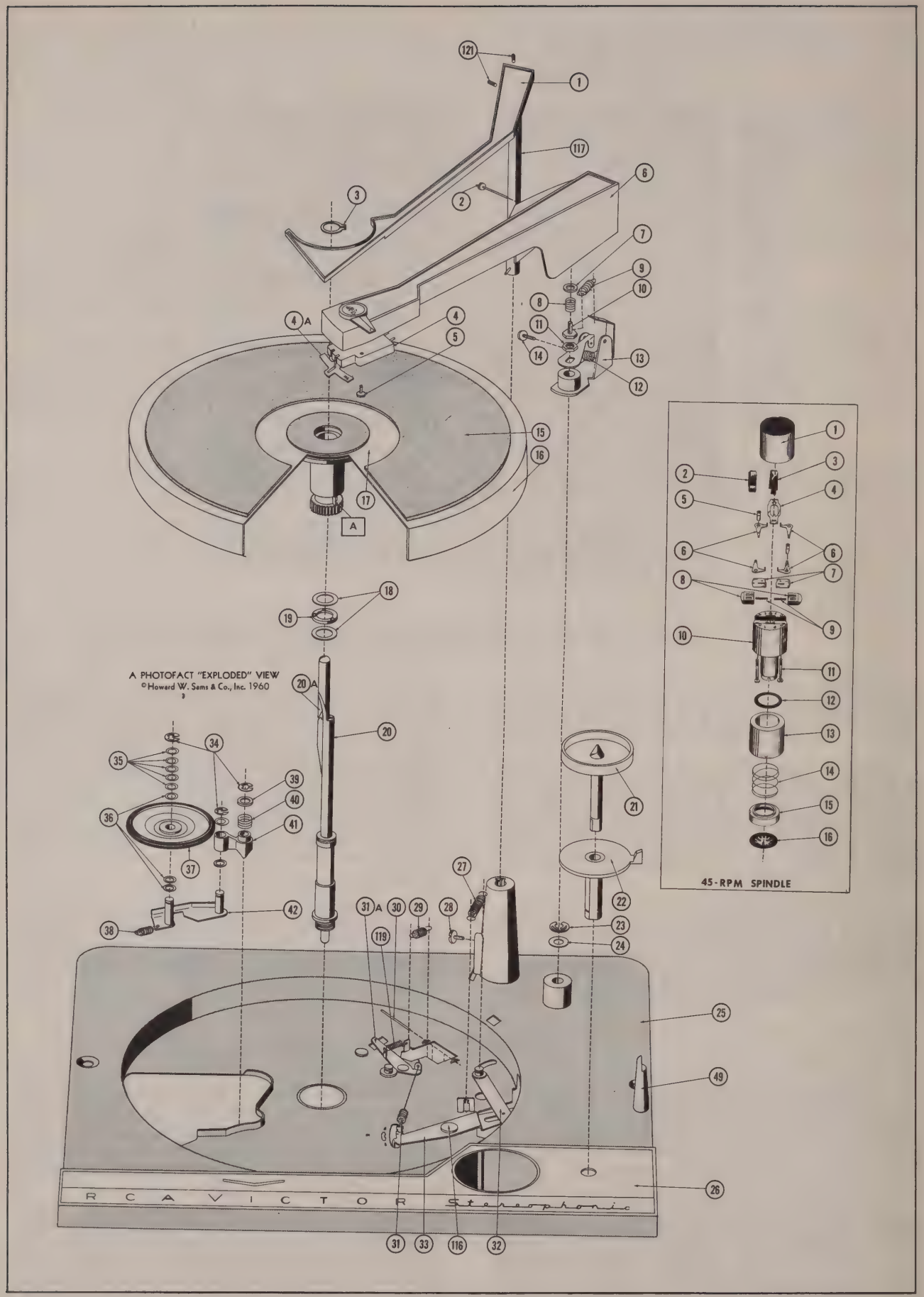


FIG.4A EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

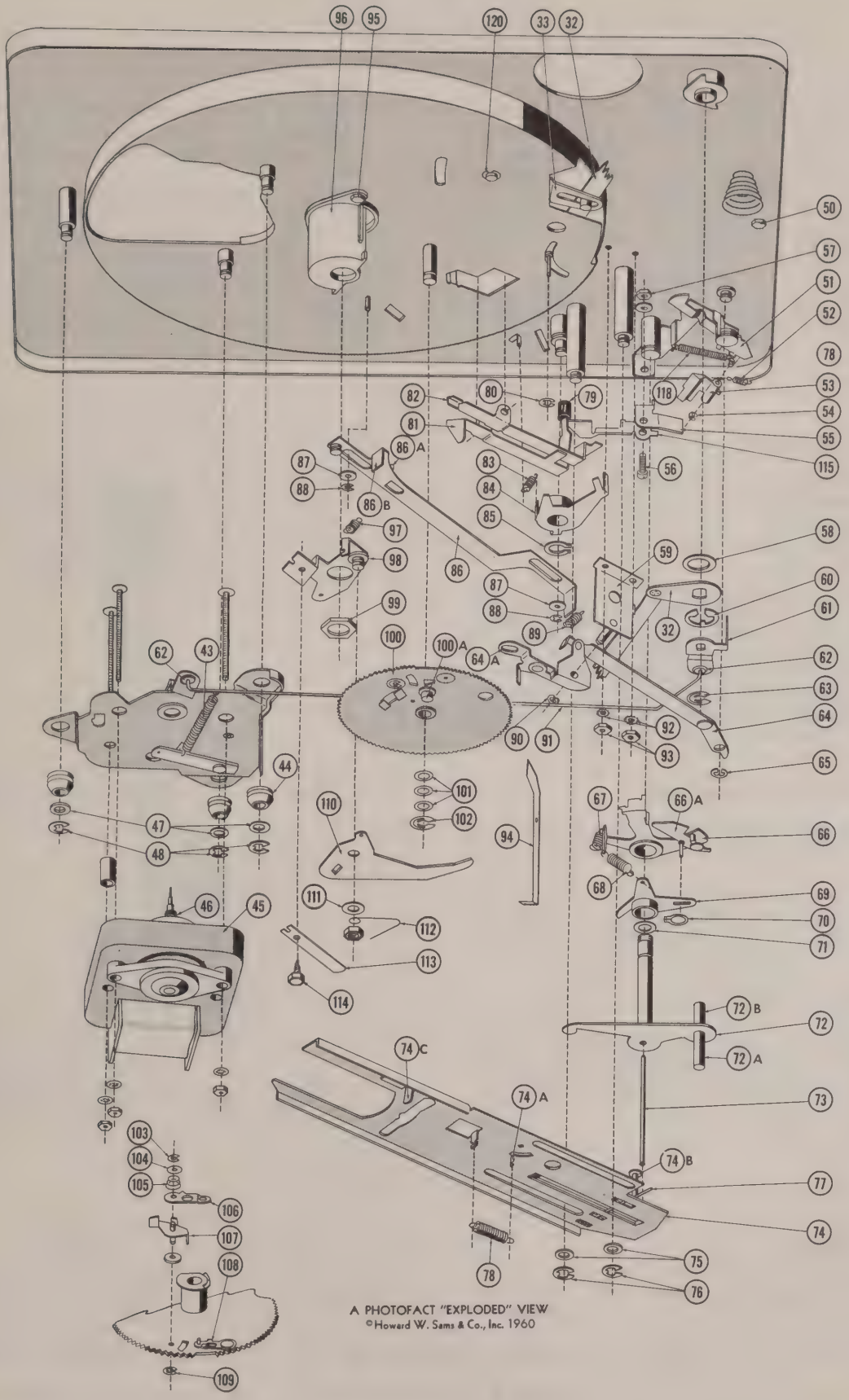


FIG.4B EXPLODED VIEW OF PARTS BELOW BASEPLATE.

control arm (33). On-off switch (122) is thereby actuated, and power is removed from the motor.

LUBRICATION

The mechanism is lubricated at the factory. Hence, it should not require additional lubrication for a long time. When the mechanism does require lubrication (such as after it has been used for a long time, or after long, hard usage), lubricate as follows:

1. Use a light machine oil on the bearing of the drive motor.
2. Use Sta-Put No. 320 or equivalent sparingly on all other bearing surfaces.
3. Apply a medium-weight, clinging-type grease (Sta-Put No. 512 or equivalent) to cycling slide (74) and the tabs on cycling gear (100).

   NOTE: The drive motor spindle, the rubber tire, and the inside rim of the turntable must be kept free of oil and grease. Carbon tetrachloride or naphtha is recommended for cleaning these parts.

ADJUSTMENTS

Pickup Arm Setdown Adjustment

The setdown position of the stylus is adjusted by means of slotted screw (14) at the side of pickup arm mounting bracket (13). If correct for one size of record, the landing position will also be correct for the other sizes of records.

To adjust, lift and turn record stabilizer arm (1) outward. Place a record on the turntable. Turn the Speed Control knob to N and the control lever to Reject. Rotate the turntable by hand until the stylus is just ready to set down on the record. Then turn landing adjustment screw (14) until the stylus sets down midway between the outer edge and the playing grooves of the record.

Pickup Arm Height Adjustment

The pickup arm height is adjusted by means of hex head screw (10) in the pickup arm.

To adjust, turn the control knob to Reject. Rotate the turntable by hand until the arm rises to its maximum height. Adjust hex head screw (10) until the stylus is 1 3/8 inches above the turntable.

Stylus Pressure Adjustment

There is no provision for field adjustment of the stylus pressure. Counterbalance spring (9), used on a particular model of record changer, is selected to give the desired stylus pressure.

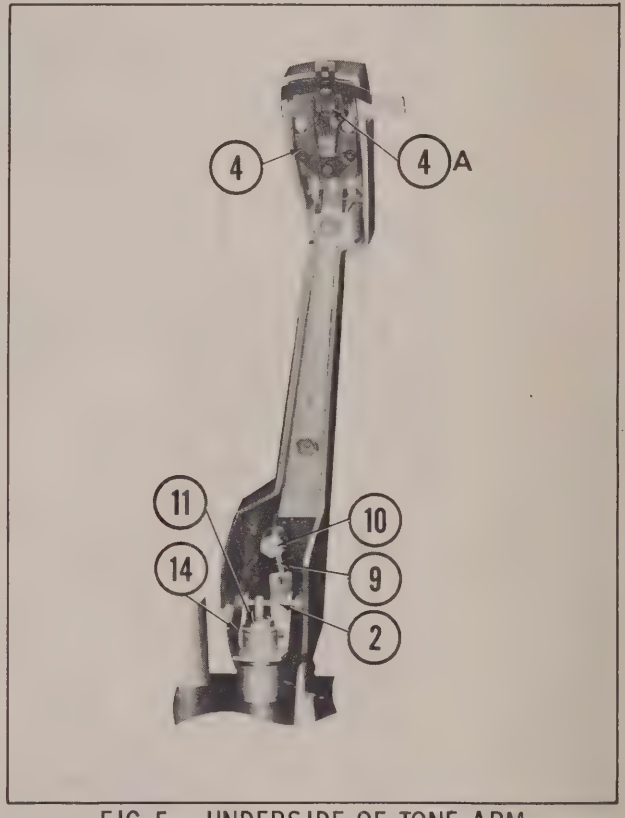


FIG.5 UNDERSIDE OF TONE ARM.

TROUBLE CHART

TROUBLE	CAUSE	REMEDY
Pickup arm lands in wrong place.	1. Pickup arm dislocated during shipment or handling.	1. See "Pickup Arm Setdown Adjustment."
	2. Rubber tip (79) missing.	2. Replace rubber tip (79).
	3. Landing selector lever (82) binding.	3. Free landing selector lever (82).
Poor reproduction.	1. Record slips because it is warped.	1. Discard the record.

TROUBLE CHART (CON'T.)

TROUBLE	CAUSE	REMEDY
	2. Defective cartridge or stylus.	2. Replace the cartridge or stylus.
	3. Turntable binding.	3. Remove the turntable. Clean the hub and shaft. Lubricate the inside of the turntable hub with light oil. Keep the outside of the turntable hub free from oil.
Rumble when turntable revolves.	1. Idler wheel (37) dirty.	1. Remove the turntable. Clean idler wheel (37), the motor pulley, and the inside of the turntable rim, with a petroleum solvent.
	2. Idler wheel (37) dented.	2. Replace idler wheel (37).
Turntable does not revolve when the On-Off-Reject control is turned on.	1. No current at motor	1. Make sure current is reaching the AC leads of the changer.
	2. Defective on-off switch (122).	2. Replace on-off switch (122).
	3. Defective motor.	3. Remove the turntable, and allow the motor to operate without a load. If current is reaching the motor but the shaft does not rotate, the motor is defective and should be replaced. Also check all wiring and soldered terminals in the changer.
Stylus does not track properly on the record.	1. Dust and dirt on the stylus.	1. Clean the stylus.
	2. Pickup wires so short that they hinder the pickup arm movement.	2. Lengthen the pickup wires.
	3. Changer not level.	3. Level the changer with a torpedo level.
	4. Pickup arm binding in its bearing.	4. Clean and lubricate the bearing.
Turntable stalls or slows down during a change cycle.	1. Low line voltage.	1. Check the line voltage. It should be at least 105 volts.
	2. Oil or grease on the rubber surfaces of idler wheel (37), or on the turntable rim.	2. Clean the rubber surfaces of idler wheel (37) and the turntable rim with alcohol.
	3. Idler wheel (37) worn or defective.	3. Replace idler wheel (37).
Record does not drop.	1. Defective spindle (20).	1. Repair or replace spindle (20).
	2. Spring (97) missing or loose.	2. Replace spring (97).
Last record repeats.	1. Stabilizer arm (1) binding (does not drop below the offset shelf of spindle (20).	1. Check for a bent stabilizer arm shaft (117) or dirt inside the shaft housing.
Pickup arm does not clear a 1-inch stack of records.	1. Pickup arm height incorrect.	1. Adjust the pickup arm height (see "Pickup Arm Height Adjustment.").

TROUBLE CHART (CON'T.)

TROUBLE	CAUSE	REMEDY
Mechanism jams.	1. Defective teeth in the turntable hub or cycling gear (100).	1. Replace or repair the turntable hub or cycling gear (100).
	2. Indexing lever (81) bent; this will cause the end to jam cycling gear (100).	2. Repair or replace indexing lever (81).
Erratic speed change.	1. Metal rod (91) bent; this will prevent it from traveling far enough to make a complete speed change.	1. Straighten metal rod (91).
	2. Speed selecting lever (61) bent; this will prevent metal rod (91) from traveling far enough to make a complete speed change.	2. Straighten speed selecting lever (61).
Changer fails to trip automatically.	1. Trip pawl intermediate lever (107) slides under the edge of the tab on motorboard (25).	1. Bend trip pawl intermediate lever (107) until it touches the tab on motorboard (25).
	2. The turndown end of trip slide lever (86) bent out too far.	2. Bend trip slide lever (86) to the proper angle.
	3. Trip engagement pawl (108) bent or rounded off; this will prevent it from traveling far enough to engage projection (A) on the turntable hub.	3. Replace or repair trip engagement pawl (108).

45 R.P.M. SPINDLE PARTS LIST

Ref. No.	Part No.	Description
	108531	Centerpost Assembly Complete
1	108575	Nose Cap-White
2	100501	Nose Cap Spring 5/16" Wide
3	100498	Slide Return Spring 1-13/64"Long, 1/4" Wide
4	100494	Record Separators Actuating Slide
5	100497	Actuating Lever Mounting Sleeve
6	100495	Slide Actuating Pivot Lever - L.H. and R.H. (1 set)
7	100493	Record Separator Knife (1 set)
8	100491A	Record Support Shelves - L.H. and R.H. (1 set)

Ref. No.	Part No.	Description
9	100492	Record Support Shelf Spring
10	105501	Centerpost Body Assembly - Zinc Diecast
11	100502	Screw #4-24 x 1 3/8"
12	100503	Flat Metal Washer, 1" O.D., .814" I.D., .005" Thick
13	101567	Rotor
14	100504	Rotor Lift Spring (coil) 2 3/4 Turns
15	100505A	Rotor Lift
16	100506	Rotor Lift Retainer (12 Teeth)

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	108525	Stabilizer Arm-Charcoal-For RP-211-1 and RP-211-3
	108530	Stabilizer Arm-Champagne White-For RP-211-3, and RP-212-1
2	108517	Pivot Shaft

Ref. No.	Part No.	Description
3	78654	Retaining Ring, 0.366" Free I.D. x .0.0250" Thick
4	106960A	Stereo Pickup Complete With 3mil Synthetic Sapphire and 0.7 mil Diamond (Pickup Stamped RMP200-6,

Ref. No.	Part No.	Description
		Used On Models RP-211-1, 211-3, 212-1
	108213A	Stereo Phono Pickup Complete With 3 mil and 0.7 mil Synthetic Sapphire Stylus (Pickup Stamped RMP200-7) Used on Models RP-212-2
4A	108215	3 mil Synthetic Sapphire and 0.7 mil Diamond Stylus For Pickup Stamped RMP 200-6 (RCA 106960A)
	108214	Dual 3 mil and 0.7 mil Synthetic Sapphire Stylus For Pickup Stamped RMP200-7 (RCA 108213A)
5	108537	Screw - #4-40 x 5/16" Long Fillister Head Machine Screw, Pickup Mounting
6	108515	Pickup Arm Shell-Charcoal With Cable and Lift Used On RP-211-1
	108514	Pickup Arm Shell-Champagne White With Cable and Lift Used On RP-211-3. RP-212-1, and RP-212-3
7		Washer-Flat Metal, 0.375" O.D. x 0.156" I.D. x 0.054/0.030" Thick
8	78738	Spring-Helical 0.218" O.D. x 0.343" Free Length, 4 Active Turns-Height Adjustment Tension
9	108668	Spring-Counterbalance Spring
10	78740	Screw-Special #6-32 x 3/8"-For Height Adjustment
11	103402	Nut - 1/4" -32 For Pickup Arm Mounting
12	108593	Spring-Helical, 0.200" O.D. x 0.593 Free Length, 19 Active Turns
13	108618	Bracket-Pickup Arm Mounting Brkt.
14	211584	Screw - #6-32 x 5/8" Long Round Head, For Landing Adjustment
15	108524	Rubber Turntable Mat For Turntable #108521 Charcoal
	108572	Rubber Turntable Mat For Turntable #108540 Charcoal
16	108521	Phono Turntable Assembly Complete For RP-211-1, and RP-211-3
	108540	Phono Turntable Assembly Complete For RP-212-1, RP-212-2
17	108522	Aluminum Insert For Turntable #108521
18	78720	Flat Metal Washer 0.685" O.D. x 0.410" I.D. x 0.024" Thick
19	78660	Thrust Bearing For Turntable
20	79242A	Spindle Assembly For 78 and 33 rpm Records.
21	108528	Speed Selecting Knob For RP-211-1 and RP-211-3
	108466	Speed Selecting Knob For RP-212-1 and RP-212-2
22	108529	On-Off-Reject Control Knob For RP-211-1 and RP-211-3
	108465	On-Off-Reject Control Knob For RP-212-1 and RP-212-2
23	108571	"C" Type Retaining Washer, 0.187" I.D. x 0.500" O.D. x 0.015" Thick
24	78649	Flat Metal Washer, 7/16" O.D. x 0.260" I.D. x 0.032" Thick
25	108520	Motorboard Assembly, Includes All Welded Or Staked Parts - Fawn Metallic Enamel - For RP-211-1
	108539	Motorboard Assembly, Includes All Welded Or Staked Parts - Fawn Metallic Enamel - For RP-211-3
	108464	Motorboard Assembly, Includes All Welded Or Staked Parts - Fawn Metallic Enamel - For RP-212-1 and RP-212-2
26	108527	Motorboard Escutcheon and Spindle Well Assembly-Charcoal-With Control Markings - For RP-211-1
	108573	Motorboard Control Knob Escutcheon Charcoal - For RP-211-3
	108532	Speed Indicator Control Knob Escutcheon - For RP-212-1 and RP-212-2
	102538	Rubber Cushion, 1-11/16" O.D. x 1/4" I.D. x 1/2" Thick For Centerpost Storage Well-RP-211-1 Only
27	108594	Spring-Helical, 0.195" O.D. x 1 7/32" Free Length
28	108534	Screw - Special Head, #4-40 x 0.200" For Mounting Index Lever
29	78709	Spring-Helical 0.218" O.D. x 0.640" Free Length 12 Active Turns
30	78659	Bearing Pin For Landing Selector Lever
31	108459	Wire - 0.036" Steel Wire Overall Length 3-15/32" - For Actuating Reject Lever
32	108450	On-Off-Reject Link
33	108461	On-Off-Reject Control Arm
34	20165A	† Retaining Ring Washer
	103445	* Retaining Ring Washer
35	108604	† Fiber Washer
	108607	* Fiber Washer
36	108605	† Fiber Washer
	108608	* Fiber Washer
37	108602	† Idler Wheel
	108609	* Idler Wheel
38	78374	† Idler Wheel Tension Spring
	108613	* Idler Wheel Tension Spring
39	102595	† Cup Washer For Idler Pulley Support Stud
		* Metal Washer
40	105422	† Compression Spring
	108610	* Idler Link Spring
41	108601	† Toggle Link
	108611	* Idler Link
42	108603	† Idler Arm
	108613	* Idler Plate Assembly
43	108606	† Detent Spring
	108614	* Detent Spring
44	75761	Motor Mounting Grommet
45	108554	Phono Motor Assembly Complete - Stamped 1401883-1, 105-125V., 60 Cycle
46	108616	Rotor Shaft Pulley Spring
47	75749	Flat Metal Washer, 3/8" O.D. x 0.190" I.D. x 0.0299" Thick
48	33726	"C" Type Retaining Washer 0.106" I.D. x 0.406" O.D. x 0.015" Thick
49	108526	Pickup Arm Rest (Plastic)-For RP-211-1 Only
50		Screw - #10 x 7/16" For Mounting Pickup Arm Rest RP-211-1 Only
51		Pickup Arm Latch Lever Assembly (Part Of Motorboard)
52	100987	Spring-Helical, 0.192" O.D. x 395" Free Length, 9 1/4 Active Turns
53	78658	Actuating Lever For Pickup Arm Latch
54	78651	"C" Type Retaining Washer, 0.094"

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
		I. D. x 0. 230" O. D. x 0. 015 Thick
55	108449	Shut-off Lever
56	108462	Shoulder Screw For Shutoff Lever
57		Nut #4-40
58		Metal Washer
59	78664	Mounting Bracket For Shutoff Link Support
60	76221	"C" Type Retaining Washer 0. 300" I. D. x 0. 660" O. D. x 0. 035" Thick
61	108454	Speed Selecting Lever
62	106620	Rubber Grommet, 11/ 32" O. D. x 1/ 8" I. D. For Speed Control Rod
63	35969	"C" Type Retaining Washer 0. 164" I. D. x 0. 500" O. D. x 0. 015"Thick
64	108451	Shutoff Link
65	77586	"C" Type Retaining Washer, 0. 122" I. D. x 0. 375" O. D. x 0. 015" Thick
66	78655A	Pickup Arm Return Lever Assembly
67	78713	Spring-Helical, 0250" O. D. x . 0562" Free Length
68	78699	Spring-Helical, 0. 180" O. D. x 0. 500" Free Length, 15 Actuve Turns
69	78724	Actuating Lever Assembly For Pick-up Arm Return
70	78653	Retaining Ring 0. 388" Free I. D. x 0. 025" Thick
71		Metal Washer
72	108570	Pickup Arm Lever
73	108567	Pickup Arm Lift Pin
74	108446	Cycling Slide Assembly
75	75749	Flat Metal, 3/ 8" O. D. x 0. 190"I. D. x 0. 0299" Thick
76	33726	"C" Type Retaining Washer, 0. 106" I. D. x 0. 406" O. D. x 0. 015'Thick
77	108447	Music Wire Spring 2-1/ 16" Long
78	78705	Spring-Helical, 0. 180" O. D. x 0. 687" Free Length
79	108615	Cushion-Rubber Tip For 7" -10" Indexing Lever-Used On RP-211-1
	108535	Cushion-Rubber Tip For 7"-10" Indexing Lever-Used On RP-211-3, RP-212-1 and RP-212-2
80		"C" Type Retaining Washer
81	108458	Index Lever-7"VS. 10" Record
82	108456	Landing Selector Lever
83	78712	Spring-Helical, 0. 250" O. D. x 0. 500" Free Length 26 Active Turns
84	78661	12" Record Indexing Lever Assembly
85	78653	Retaining Ring, 0. 388" Free I. D. x 0. 025" Thick
86	106447	Trip Slide Lever
87	106708	Teflon Bushing For Trip Slide
88	78651	"C" Type Retaining Washer, 0. 094" I. D. x 0. 230" O. D. x 0. 015" Thick
89	78698	Spring-Helical, 0. 200" O. D. x 0. 718" Free Length, 26 Active Turns
90	78651	"C" Type Retaining Washer, 0. 094" I. D. x 0. 230" O. D. x 0. 015" Thick
91	108463	Metal Rod, 0. 012" O. D. x 9-27/ 64" Long For Motor Speed Selection
92		Washer - #6 Ext. Tooth Lockwasher
93		Hex Nut
94	108460	Index Lever-10" vs 12" Record
95		Screw - #8 x 0. 375", Hex Head Tapping Screw
96	108619	Turntable and Spindle Support
97	78711	Spring-Helical, 0. 190" O. D. x 0. 500" Free Length
98	108452	Spindle Mounting Bracket Assembly
99	100342	Nut - 1/ 2" -32 For Mounting Spindle Assembly
100	108448	Cycling Gear Assembly, Less Pawl Levers
101		Washer
102		"C" Type Retaining Washer
103	78651	"C" Type Retaining Washer, 0. 094" I. D. x 0. 230" O. D. x 0. 015 Thick
104	79240	Flat Washer, 0. 300" O. D. x 140I. D. X 0. 015" Thick
105	78727	Conical Compression Spring
106	78725	Trip Pawl Actuating Lever
107	78726	Trip Pawl Intermediate Lever
108		Trip Engagement Pawl (Part of Cycling Gear)
109	78651	"C" Type Retaining Washer, 0. 094" I. D. x 0. 230" O. D. x 0. 015" Thick
110	108453	Spindle Operating Arm Assembly
111	79092	Flat Metal Washer, 9/ 16" O. D. x 0. 158" I. D. x 0. 0299" Thick
112		Nut - #6-32
113	108568	Spring-Blued Spring Steel, Flat Spring
114		Screw -#8 x 0. 250", Hex Head Tapping Screw
115	108533	Shutoff Lever Assembly
116	108455	Stud-Mounting Stud For Control Arm-Used on RP-211-1 Only
	75748	Stud-Mounting Stud For Control Arm-Used on RP-211-3, RP-212-1 and RP-212-2
117	108569	Stabilizer Arm Shaft
118	78698	Spring-Helical, 0. 200" O. D. x 0. 718" Free Length, 26 Active Turns
119	78709	Spring-Helical, 0. 218" O. D. x 0. 640" Free Length, 12 Active Turns Not Used In Some Versions.
120	74431	Spring Washer, "U" Type For Mounting Stud #116
121		Set Screw, #8-32 x 3/ 16" For Mounting Stabilizer Arm
122	108457	Switch-S. P. S. T., 34, 125V. A. C. On-Off Switch

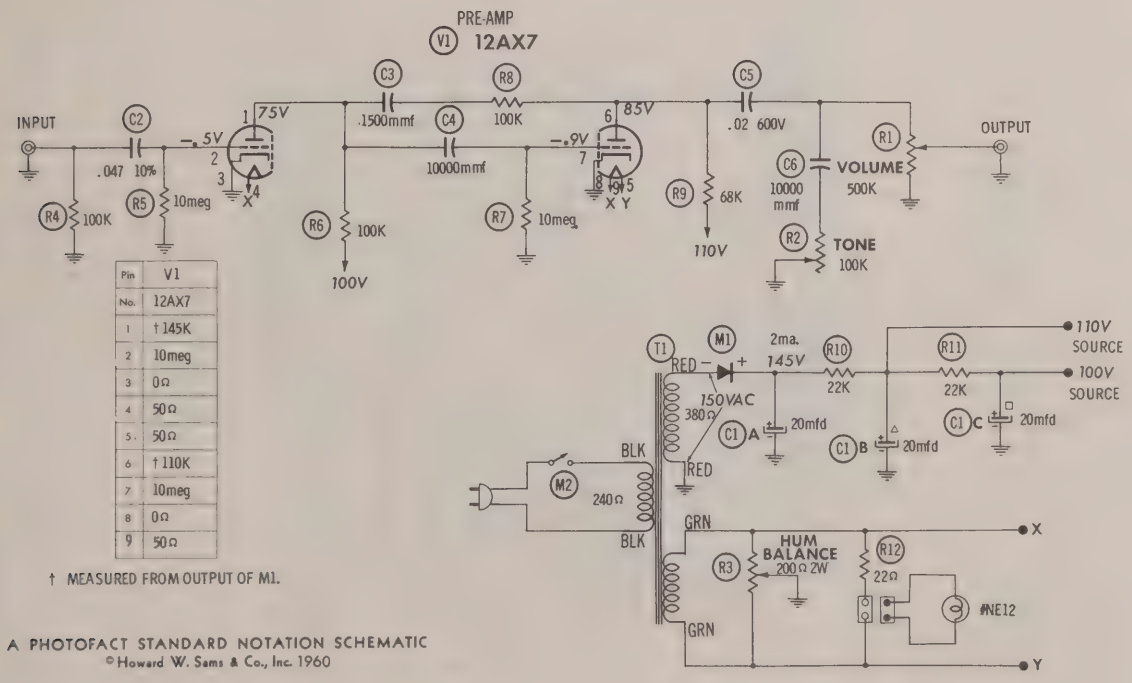
† For Motor Assembly Stamped 1401883-1 Code 190
* For Motor Assembly Stamped 1401883-1 Code 107

PHOTOFACT® Folder

ROBERTS
MODEL PA-10

ROBERTS
MODEL PA-10

TRADE NAME	Roberts Model PA-10
MANUFACTURER	Roberts Electronics, Inc., 1028 N. LaBrea Ave., Hollywood 38, California
TYPE SET	AC Operated One Tube Preamplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 6 Watts, .1 Amp. @ 117 Volts AC



Pin No.	V1 12AX7
1	†145K
2	10meg
3	0Ω
4	50Ω
5	50Ω
6	†110K
7	10meg
8	0Ω
9	50Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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ROBERTS
MODEL PA-10

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JW542

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Preamplifier	12AX7			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ROBERTS PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	20	150		AFH3-17-10	XC0041	FP311.2	TMT-4	TVL-3433	
B	▲20	150							
C	■20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 200V 10%		V84C2S47-10%		PM2S47	4DP-3-473		2TM-S47
C3	1500		BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	.02 600V		P688N-02	DD-203	CUB6S2	6DP-2-203	GEM-612	6TM-S2
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROBERTS PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	3928	B-60	A47-500K-Z	Q13-133	U48	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R2A	100K	½	3929	B-41	A47-100K-Z	Q13-128	U39	Tone
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	200Ω	2(WW)	CM1649	WN-201	A43-200	WPK-200	C200P	Hum Balance
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	100K	
R5	10meg	
R6	100K	

ITEM No.	RATING	REMARKS
R7	10meg	
R8	100K	
R9	68K	

ITEM No.	RATING	REMARKS
R10	22K	
R11	22K	
R12	22Ω	

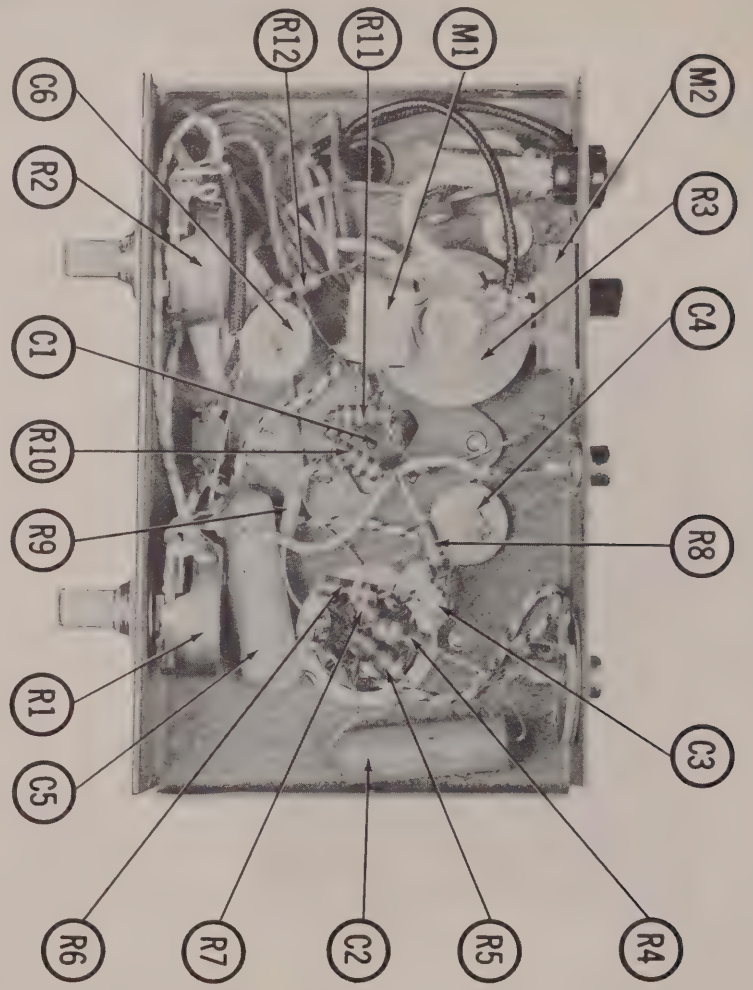
TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	ROBERTS PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② .1A	150V ② .002A	6.3V ② .3A	124						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	ROBERTS PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.002A		D-5410 ①	1159 ①	10 ①		① Selenium Type

CHASSIS—BOTTOM VIEW



MISCELLANEOUS

ITEM No.	PART NAME	ROBERTS PART No.	NOTES
M2	Switch		Off-On (SPDT, Slide Type)

WIRING DATA

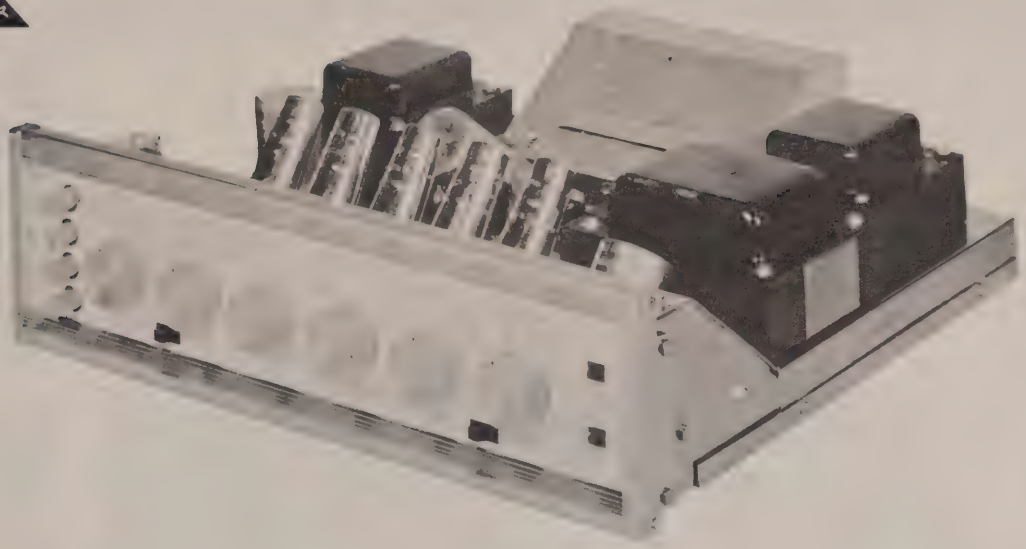
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

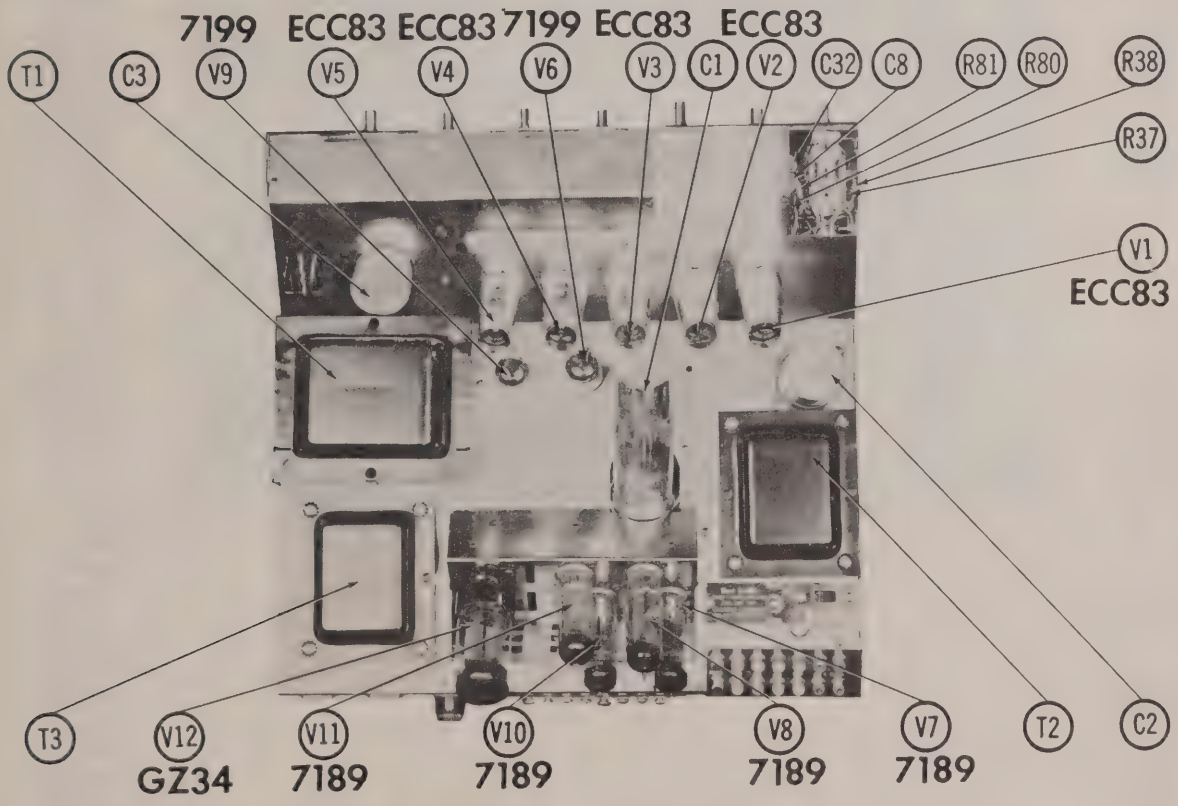
SHERWOOD
MODEL S-5000

SHERWOOD
MODEL S-5000



TRADE NAME	Sherwood Model S-5000
MANUFACTURER	Sherwood Electronic Laboratories, Inc., 4300 N. California Ave.; Chicago 18, Illinois
TYPE SET	AC Operated 12 Tube Stereo Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 105 Watts, 1.05 Amp. @117 Volts AC

SHERWOOD
MODEL S-5000



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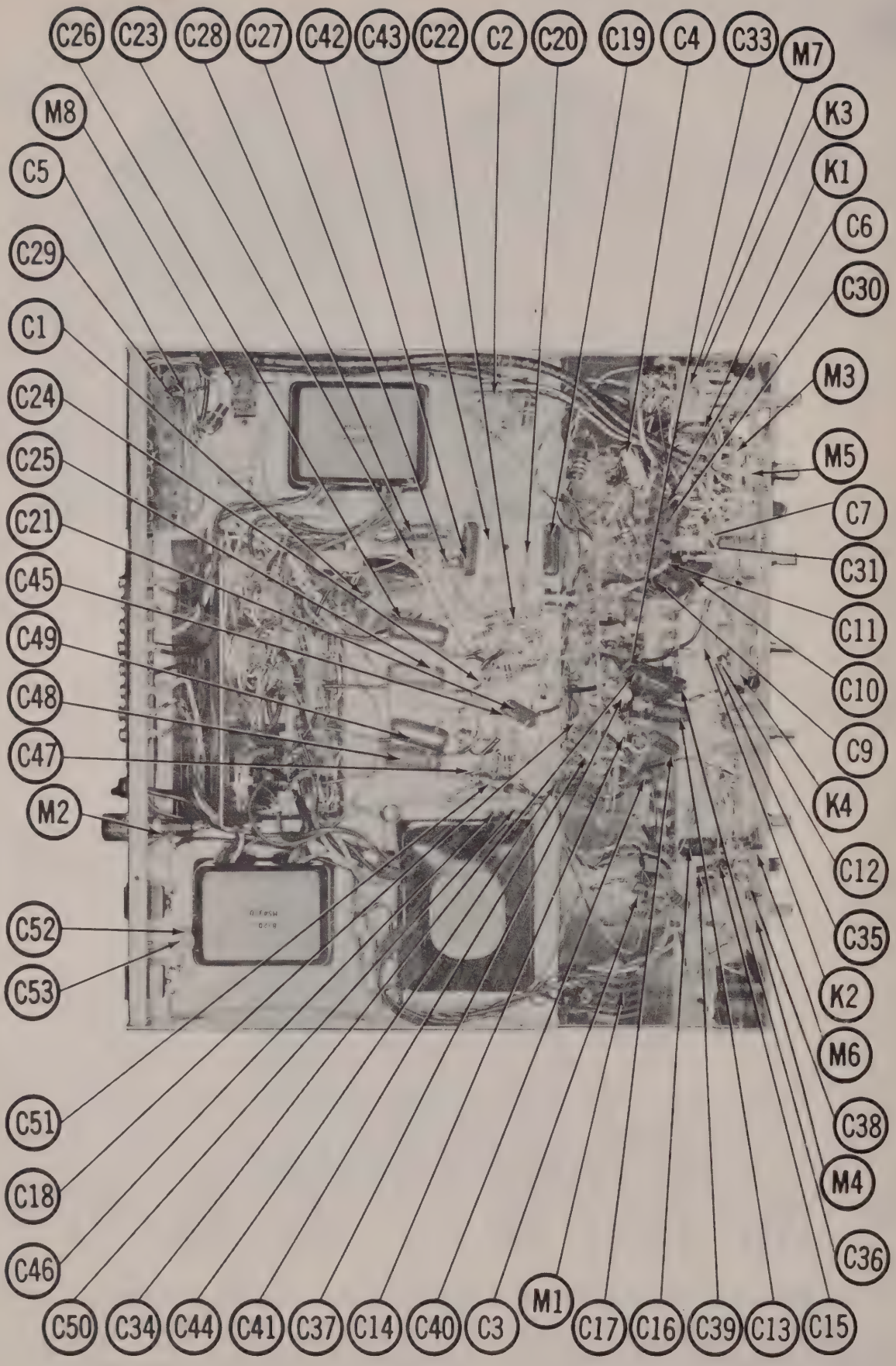
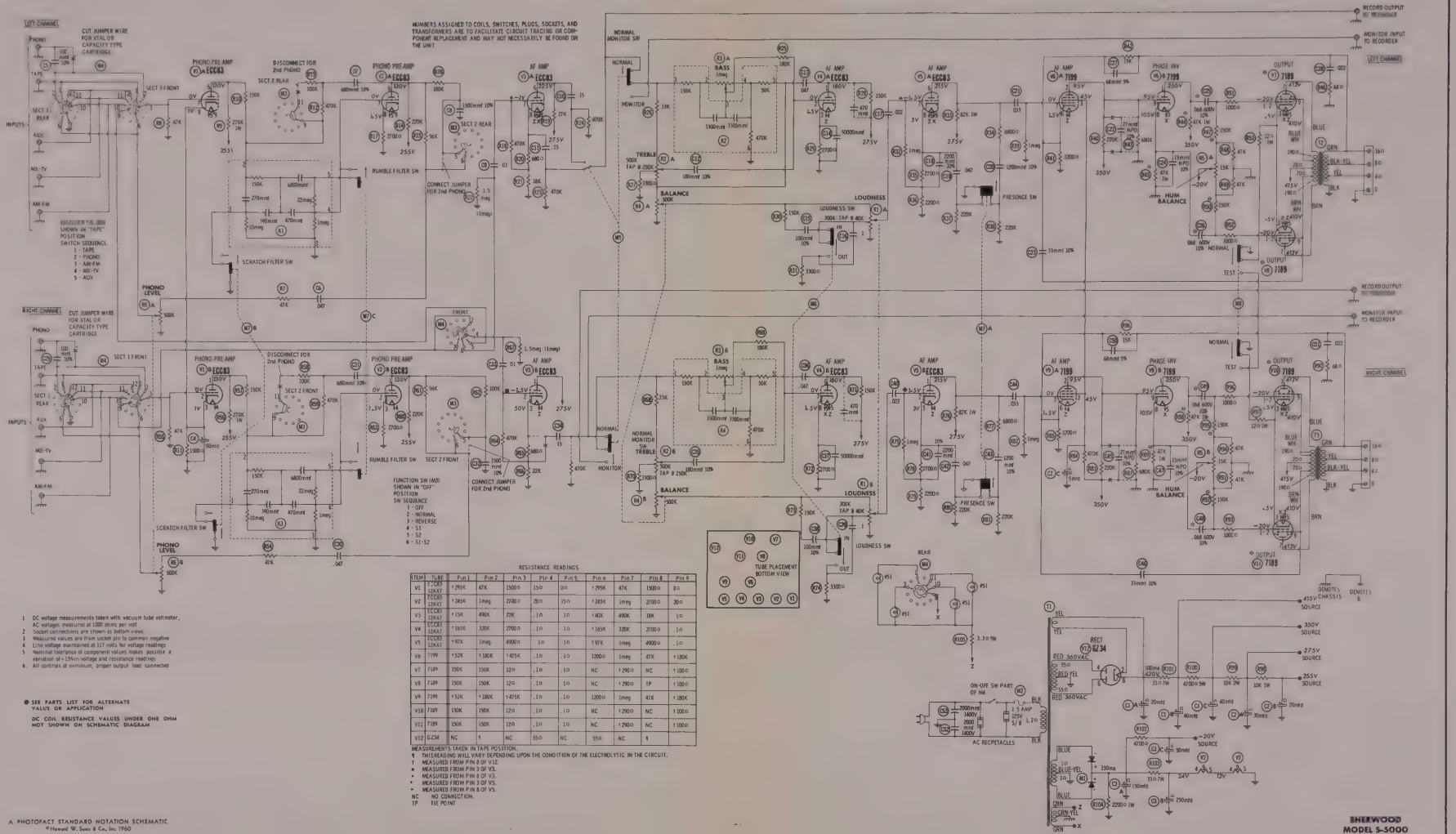
JV493

DATE 2-60

SET 475 FOLDER 9



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



MEMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†295K	47K	1500Ω	15Ω	0Ω	†295K	47K	1500Ω	0Ω
V2	ECC83 12AX7	†245K	1meg	2700Ω	2Ω	35Ω	†245K	1meg	2700Ω	2Ω
V3	ECC83 12AX7	†15K	490K	29K	.1Ω	1Ω	†40K	490K	18K	1Ω
V4	ECC83 12AX7	†165K	330K	2900Ω	.1Ω	1Ω	†165K	330K	2500Ω	.1Ω
V5	ECC83 12AX7	†97K	1meg	4900Ω	1Ω	1Ω	†97K	1meg	4900Ω	.1Ω
V6	7199	†52K	†180K	†475K	.1Ω	1Ω	1200Ω	1meg	47K	†180K
V7	7189	150K	150K	12Ω	.1Ω	1Ω	NC	†290Ω	NC	†100Ω
V8	7189	150K	150K	12Ω	.1Ω	1Ω	NC	†290Ω	TP	†100Ω
V9	7199	†52K	†180K	†475K	.1Ω	1Ω	1200Ω	1meg	47K	†180K
V10	7189	150K	150K	12Ω	.1Ω	1Ω	NC	†290Ω	NC	†100Ω
V11	7189	150K	150K	12Ω	.1Ω	1Ω	NC	†290Ω	NC	†100Ω
V12	GZ34	NC	¶	NC	55Ω	NC	55Ω	NC	¶	

MEASUREMENTS TAKEN IN TAPE POSITION.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V12.
• MEASURED FROM PIN 3 OF V3.
* MEASURED FROM PIN 8 OF V3.
▪ MEASURED FROM PIN 8 OF V5.
NC NO CONNECTION.
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings
6. All controls at minimum, proper output load connected

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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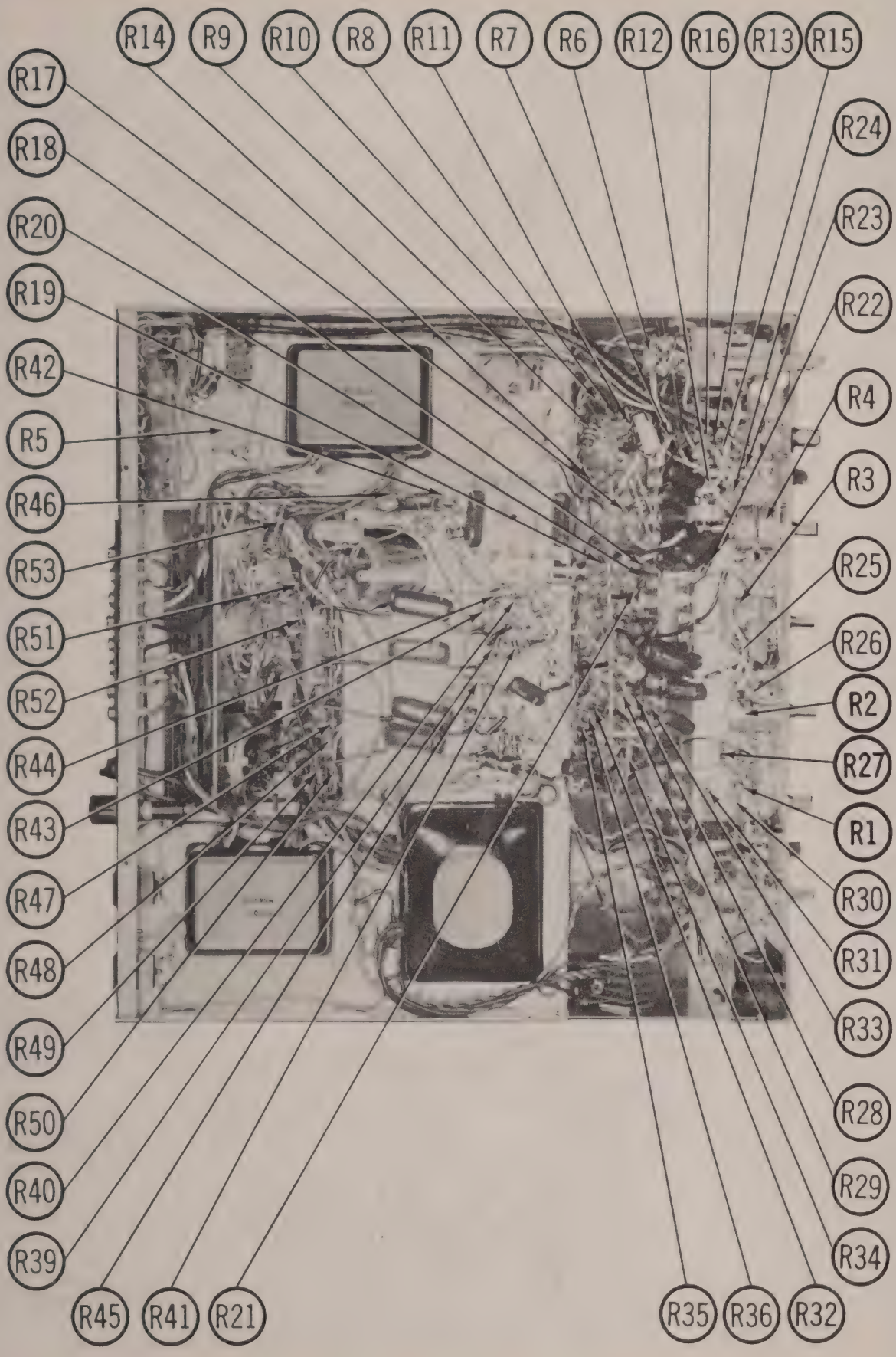
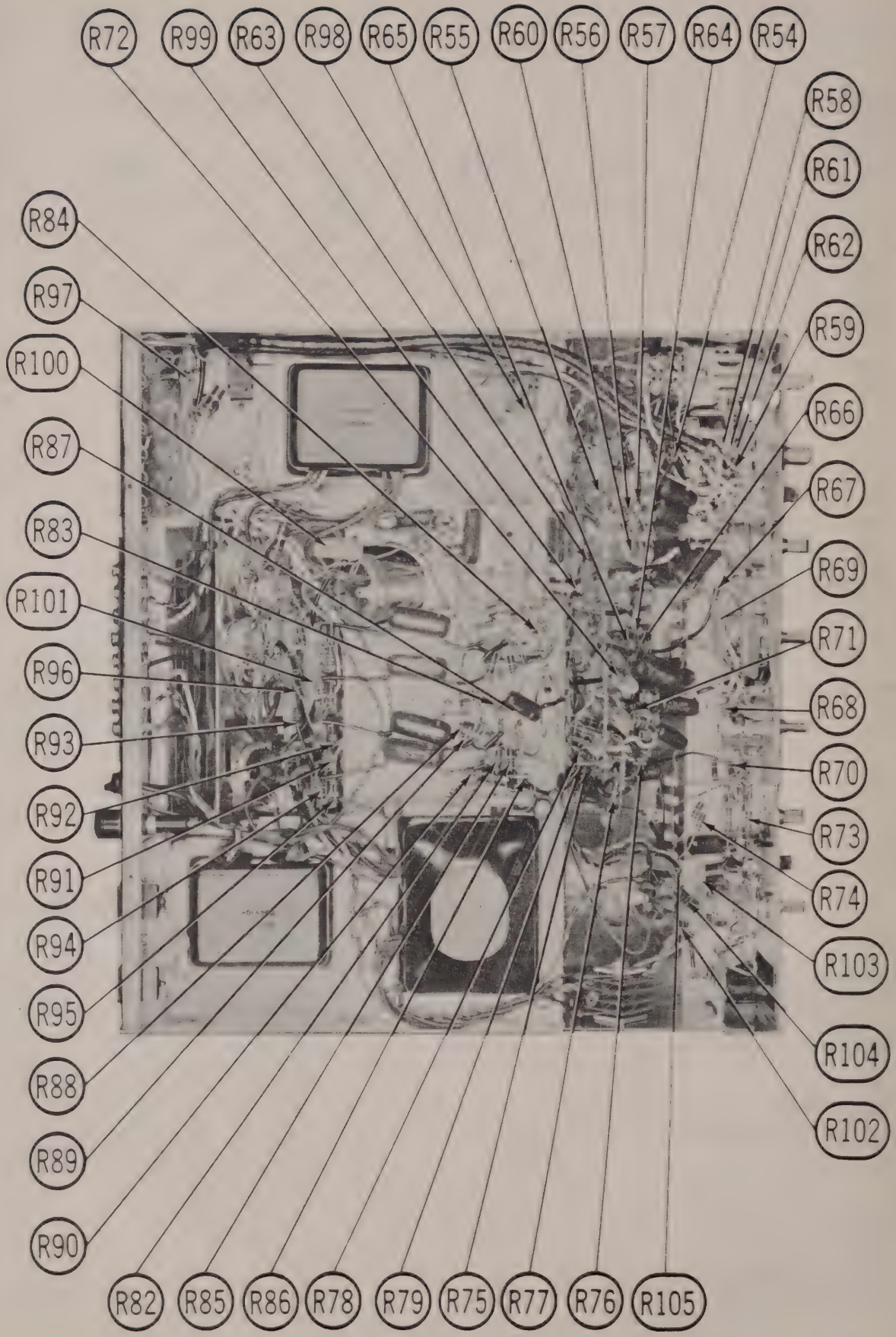


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

SHERWOOD
MODEL S-5000

FOLDER 9



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	Left Channel Phono Preamp Right Channel Phono Preamp	ECC83/12AX7
V2	Left Channel Phono Preamp Right Channel Phono Preamp	ECC83/12AX7
V3	Left Channel AF Amp- Right Channel AF Amp.	ECC83/12AX7
V4	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7
V5	Left Channel AF Amp. - Right Channel AF Amp.	ECC83/12AX7
V6	Left Channel AF Amp. - Phase Inv.	7199
V7	Left Channel Output	7189 (EL84, 6BQ5) *
V8	Left Channel Output	7189 (EL84, 6BQ5) *
V9	Right Channel AF Amp. - Phase Inv.	7199
V10	Right Channel Output	7189 (EL84, 6BQ5) *
V11	Right Channel Output	7189 (EL84, 6BQ5) *
V12	Rectifier	GZ34 (5AR4) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	SHERWOOD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲20	500		AFH3-54	D0185	FP288	TMD-62	TVLS-3966 *	
B	■40	500				TC83	TD-20-500		
C	▲40	500							
C2A	▲30	400		AFH3-37-95		FP396.12	TMT-150	TVLS-3686.3*	
B	■20	400							
C	▲5	250							
C3A	■150	50						TVLS-3340 *	
B	▲250	50							
C	▲50	50							
C4	50	6		PWE6050	EC50-6	TT6X50	ML50-6	TE-1100	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	100 10%		1469-0001	TCZ-100	22R5T1	CM-20B-101K	MCB235	MS-310
C6	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C7	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C8	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C9	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C10	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C11	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C12	180 10%		1469-00018	TCZ-180	22R5T18	CM-20B-181K	CNO-318	MS-318
C13	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C14	50000		BPD-05	DD-503	PM6S5	6DP-3-503	GP150	5HK-S50
C15	100 10%		1469-0001	TCZ-100	22R5T1	CM-20B-101K	MCB235	MS-310
C16	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C17	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C18	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C19	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C20	1200 10%		DI-1200	DD-122	1R5D12	CCD-122	GP212	10TS-D12
C21	.033 400V		P488N-033	DD-303	CUB4S33	4DP-2-333	GEM-4133	4TM-S33
C22	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C23	33 10%		1469-000033	DD-330	22R5Q33	CM-20B-330K	CNO-433	MS-433
C24	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C25	.068 600V 10%	Note 1	V84C6S68-10%		PM6S68	6DP-4-683		6TM-S68
C26	.068 600V 10%	Note 1	V84C6S68-10%		PM6S68	6DP-4-683		6TM-S68
C27	68 5%		1469-000068	TCZ-68	22R5Q68	CM-20B-680J	CNO-468	MS-468
C28	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C29	100 10%		1469-0001	TCZ-100	22R5T1	CM-20B-101K	MCB235	MS-310
C30	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C31	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C32	1500 10%		DI-1500	DD-152	PM6D15	CCD-152	GP215	10TS-D15
C33	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C34	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C35	180 10%		1469-00018	TCZ-180	22R5T18	CM-20B-181K	CNO-318	MS-318
C36	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C37	50000		BPD-05	DD-503	PM6S5	6DP-3-503	GP150	5HK-S50
C38	100 10%		1469-0001	TCZ-100	22R5T1	CM-20B-101K	MCB235	MS-310
C39	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P1
C40	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C41	2200 10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C42	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	1200 10%		DI-1200	DD-122	1R5D12	CCD-122	GP212	10TS-D12
C44	.033 400V		P488N-033	DD-303	CUB4S22	4DP-2-333	GEM-4133	4TM-S33
C45	27 NPO 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C46	33 10%		1469-000033	DD-330	22R5Q33	CM-20B-330K	CNO-433	MS-433
C47	15 NPO 10%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C48	.068 600V 10%	Note 1	V84C6S68-10%		PM6S68	6DP-4-683		6TM-S68
C49	.068 600V 10%	Note 1	V84C6S68-10%		PM6S68	6DP-4-683		6TM-S68
C50	68 5%		1469-000068	TCZ-68	22R5Q68	CM-20B-680J	CNO-468	MS-468
C51	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C52	2000 1400V		DAC-3	DD30-202	HVC20D2	16DP-1-202	UAC-220	BL-D20
C53	2000 1400V		DAC-3	DD30-203	HVC20D2	16DP-1-202	UAC-220	BL-D20

Note 1. Matched to 3%.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	SHERWOOD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	300K 40K Tap	½	A670J7					Loudness, Left Channel
B	300K 40K Tap	½						Loudness, Right Channel
R2A	500K 250K Tap	½	A670J2					Treble, Left Channel
B	500K 250K Tap	½						Treble, Right Channel
R3A	1meg	½	A670J3					Bass, Left Channel
B	1meg	½						Bass, Right Channel
R4A	500K	½	A671J1					Balance, Right Channel
B	500K	½						Balance, Left Channel
R5A	15K	½	A670J6					Hum, Balance, Left Channel
B	15K	½						Hum, Balance, Right Channel
R6A	500K	½	A670J4					Ph. Level, Left Channel
B	500K	½						Ph. Level, Right Channel

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R7	47K	
R8	47K	
R9	270K 1W	
R10	150K	
R11	1500Ω	
R12	470K	
R13	100K	
R14	220K	
R15	56K	
R16	100K	
R17	2700Ω	
R18	470K	
R19	27K	
R20	680Ω	
R21	18K	
R22	1.5meg	(1meg) *
R23	470K	
R24	470K	
R25	180K	
R26	33K	
R27	3300Ω	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REMARKS
R28	150K	
R29	2700Ω	
R30	150K	
R31	3300Ω	
R32	1meg	
R33	82K 1W	
R34	6800Ω	
R35	2700Ω	
R36	2200Ω	
R37	220K	
R38	220K	
R39	1meg	
R40	220K	
R41	1200Ω	
R42	15K	
R43	680K	
R44	47K 1W	Note 1
R45	47K 1W	Note 1
R46	68Ω	
R47	150K	Note 1
R48	47K	
R49	47K	
R50	150K	Note 1
R51	1000Ω	
R52	1000Ω	
R53	12Ω 1W	
R54	47K	
R55	47K	
R56	270K 1W	
R57	150K	
R58	100K	
R59	470K	
R60	220K	
R61	56K	
R62	100K	
R63	2700Ω	
R64	470K	
R65	680Ω	
R66	22K	
R67	1.5meg	(1meg) *
R68	33K	
R69	180K	
R70	3300Ω	
R71	150K	
R72	2700Ω	
R73	150K	
R74	3300Ω	
R75	1meg	
R76	82K 1W	
R77	6800Ω	
R78	2700Ω	
R79	2200Ω	
R80	220K	
R81	220K	
R82	1meg	
R83	220K	
R84	470K	
R85	1200Ω	
R86	15K	
R87	680K	
R88	47K 1W	Note 1
R89	47K 1W	Note 1
R90	68Ω	
R91	47K	
R92	150K	Note 1
R93	1000Ω	
R94	47K	
R95	150K	Note 1
R96	1000Ω	
R97	12Ω 1W	
R98	10K 1W	
R99	10K 2W	
R100	4700Ω 5W	
R101	33Ω 7W	
R102	4700Ω	
R103	33Ω 7W	
R104	2200Ω 1W	
R105	3.3Ω 5W	

Note 1. Identical values are matched to 3%.
* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SHERWOOD PART No.	REPLACEMENT DATA
K1	Rumble Filter	270mmf, 390mmf, 470mmf, 6800mmf, 150K, 1meg, 10meg, 22meg	58-3276	
K2	Tone Compensation	3300mmf, 3300mmf, 50K, 150K, 470K	58-3275	
K3	Rumble Filter	270mmf, 390mmf, 470mmf, 6800mmf, 150K, 1meg, 10meg, 22meg	58-3276	
K4	Tone Compensation	3300mmf, 3300mmf, 50K, 150K, 470K	58-3275	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SHERWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ 1.05A	720 VCT @.100A	5V@ 2A	B922J3-3						
	SEC. 3	SEC. 4	SEC. 5							
	60 VCT @.150A	6.3 VCT @5.2A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SHERWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7800Ω CT Screen Taps@ 800Ω CT	16Ω Tap@ 8Ω, 4Ω	B920J4							
T3	7800Ω CT Screen Taps@ 800Ω CT.	16Ω Taps@ 8Ω, 4Ω	B920J4							

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	SHERWOOD PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.150A	①				①2S33-2CN1-RV	① Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			SHERWOOD PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	1.5A 125V S/B			31301.5 (3AG 1½A 125V)	342001	MDX 1½	HKP

MISCELLANEOUS

ITEM No.	PART NAME	SHERWOOD PART No.	NOTES
M3	Switch		Function
M4	Switch		Selector
M5	Switch		Normal-Monitor (DPDT, Slide Type)
M6	Switch		Loudness In-Loudness Out (DPDT, Slide Type)
M7A	Switch		Presence
B	Switch		Scratch Filter
C	Switch		Rumble
M8	Switch		Test-Normal (DPDT, Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

SHERWOOD MODELS
SMX-A, -B, -S

SHERWOOD MODELS
SMX-A, -B, -S

TRADE NAME	Sherwood Models SMX-A, SMX-B, SMX-S
MANUFACTURER	Sherwood Electronic Laboratories, Inc., 4300 N. California Ave., Chicago 18, Illinois
TYPE SET	AC Operated 4 Tube FM Multiplex Adapter
POWER SUPPLY	110-125 Volts AC, 50-60 Cycles RATING 14 Watts, .16 Amp. @ 117 Volts AC

ADJUSTMENTS

SPLIT CHANNEL STEREO

Place the Circuit Selector switch in SPLIT position, Balance control in FM position and then rotate clockwise to MX. Adjust sound level with the MX Level control until equal sound output is heard as the Balance control is switched between FM and MX. Turn Balance control to Stereo. Further balancing of the program can be done by moving the Balance control to the right or left from the Stereo position.

CROSBY SYSTEM STEREO

Place the Circuit switch in CROSBY position, Balance control to FM and then rotate clockwise to MX. Adjust the sound level with the MX Level control until equal sound output is heard as Balance control is switched between FM and MX. Rotate Balance control to Stereo. The Balance control will now serve as the Demension control. Rotation toward MX will result in greater separation and rotation toward FM will provide less separation.

FREQUENCY CONTROL

The Frequency control is located on top of the chassis and may be reached thru a hole in the bottom plate with a screwdriver. Adjust for the clearest reception. This adjustment is not critical and for most cases may be set in the center of its range.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JZ599

SET 475 FOLDER 10

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	AF Amp. -Sub Carrier Amp	7199	V3	Multivibrator	12AU7A
V2	Limiter	ECC83 (12AX7) *	V4	Phase Inverter	6BF6

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SHERWOOD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■60	200			B0190		TMD-22	TVLS-3485.5 *	
B	▲60	200			BR4025		TD-40-250		
C	▬40	200							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

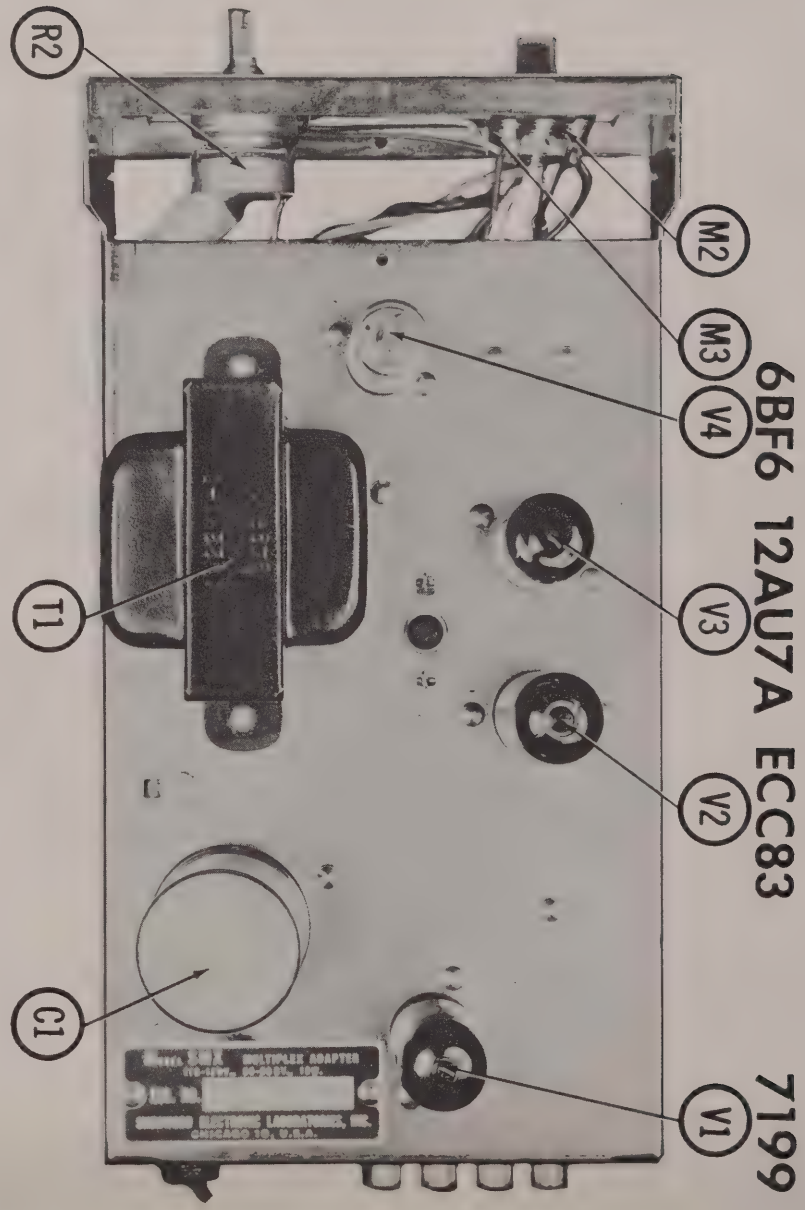
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	180		DI-180	DD-181	L10T18	CCD-181	GP318	10TS-T18
C3	.0082 400V 10%					6DP-2-822	GEM-16282	6TM-D8
C4	.0082 400V 10%					6DP-2-822	GEM-16282	6TM-D8
C5	.0033 400V 10%		V84C4D33-10%		PM6D33	6DP-1-332	GEM-16233	6TM-D33
C6	.0082 400V 10%					6DP-2-822	GEM-16282	6TM-D8
C7	.0082 400V 10%					6DP-2-822	GEM-16282	6TM-D8
C8	20000		BPD-02	DD-203	BYB6S2	CCD-203	GP120	5HK-S20
C9	50000		BPD-05	DD-503	H-0585	6DP-3-503	GP150	5HK-S5
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C11	180		DI-180	DD-181	L10T18	CCD-181	GP318	10TS-T18
C12	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C13	150 5%		1469-00015	TCZ-150	22R5T15	CM-20B-151J	MCE236	MS-315
C14	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C15	270 10%		DI-270	DD-271	L10T27	CCD-271	GP327	10TS-T27
C16	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C17	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C18	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C19	2000 1400V		DAC-3	DD30-202	HVC20D2	16DP-1-202	UAC-220	BL-D20
C20	2000 1400V		DAC-3	DD30-202	HVC20D2	16DP-1-202	UAC-220	BL-D20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SHERWOOD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	500K	½	A670M2					MX Level
R2A	100K	½	A670M1					Balance, Channel A
B	500K	½						Balance, Channel B
R3A	3000Ω	½	A670M3	AB-8	B47-3000-S	B11-112	SU-8	MX Frequency
B	Shaft			AK-1	Not Req.	TM4	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	100K	
R5	470K	
R6	1200Ω	
R7	2200Ω	
R8	1200Ω	
R9	47K	
R10	33K	
R11	1200Ω	
R12	470K	
R13	22K	

ITEM No.	RATING	REMARKS
R14	6800Ω	
R15	22K	
R16	12K	
R17	1200Ω	
R18	100K	
R19	47K	
R20	47K	
R21	47K	
R22	4700Ω	
R23	4700Ω	

ITEM No.	RATING	REMARKS
R24	1meg	
R25	47K	
R26	47K	
R27	47K	Note 1
R28	47K	Note 1
R29	680Ω	
R30	680Ω	
R31	3.3Ω 1W	

Note 1. R27 & R28 matched within 3%.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SHERWOOD PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	RF Choke							2.5MH
L2	RF Choke					70F153A1		1.6MH
L3	RF Choke					70F153A1		1.6MH
L4	RF Choke							2.5MH

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	SHERWOOD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .16A	115V @ .010A	6.3VCT @ 1.3A	A922M1-3						

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					
	CURRENT (Measured)	SHERWOOD PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.010A	①	① RS065	① 1234AH	① 65	② SR200	① Selenium Type ② Silicon Type

MISCELLANEOUS

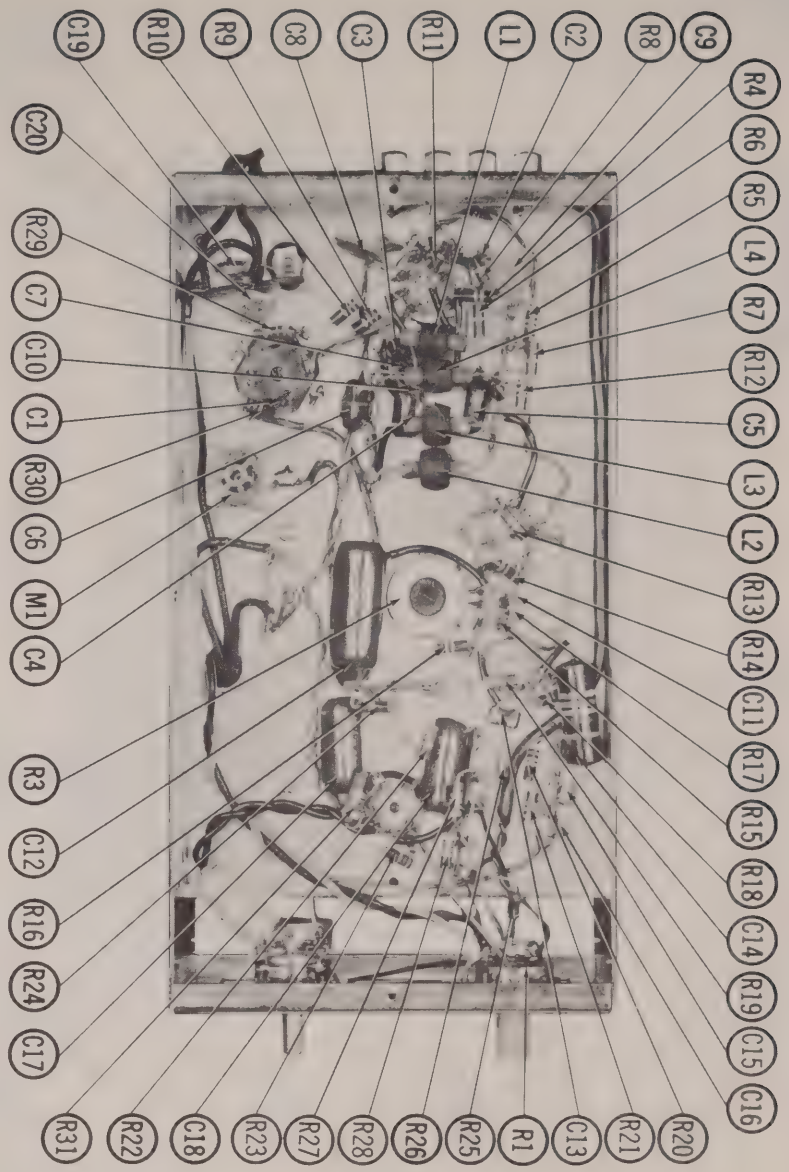
ITEM No.	PART NAME	SHERWOOD PART No.	NOTES
M2	Switch		Spit - Crosby (DPDT, Slide Type)
M3	Switch		Power Off-On (DPDT, Slide Type)

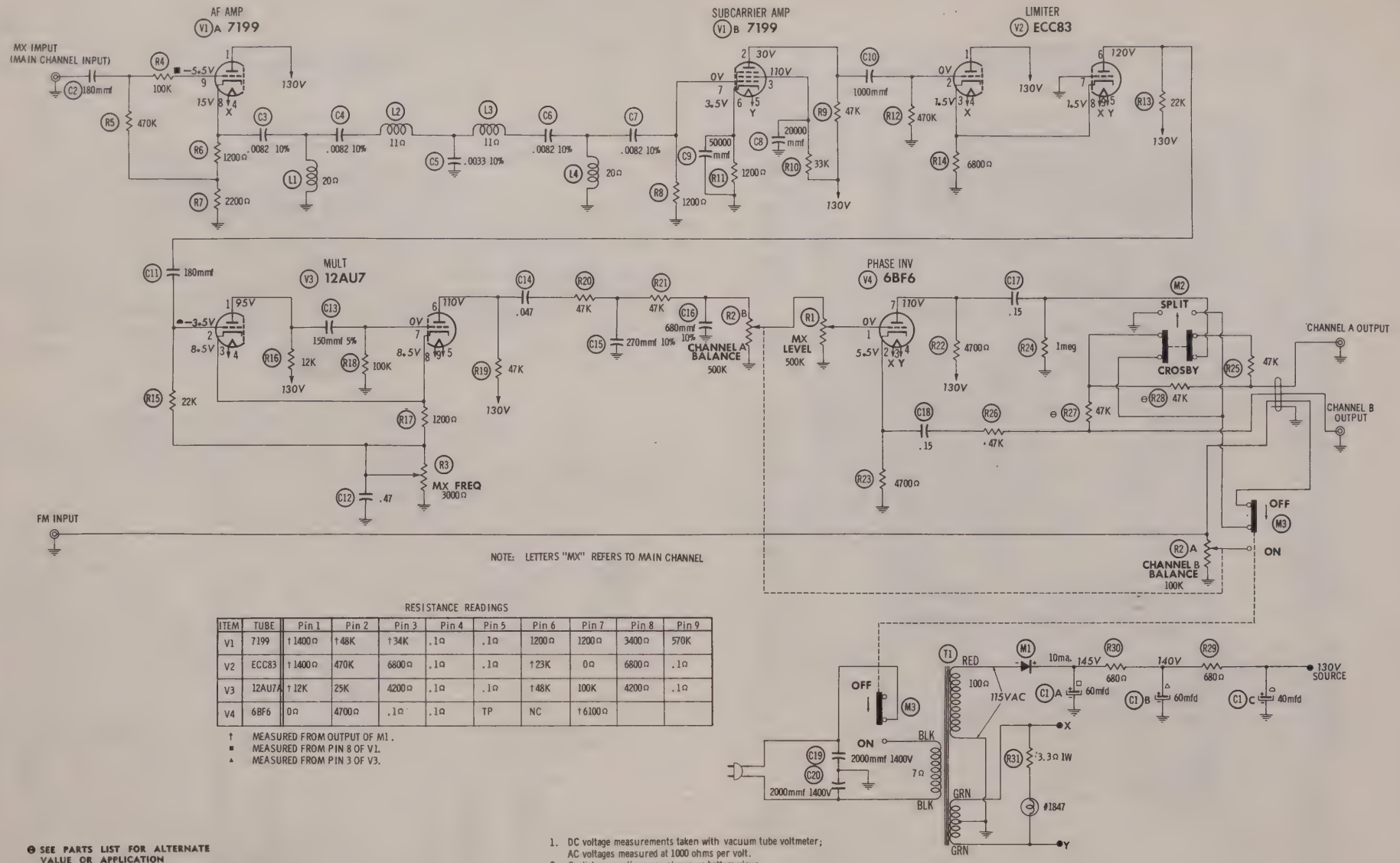
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7199	†1400Ω	†48K	†34K	.1Ω	.1Ω	1200Ω	1200Ω	3400Ω	570K
V2	ECC83	†1400Ω	470K	6800Ω	.1Ω	.1Ω	†23K	0Ω	6800Ω	.1Ω
V3	12AU7A	†12K	25K	4200Ω	.1Ω	.1Ω	†48K	100K	4200Ω	.1Ω
V4	6BF6	0Ω	4700Ω	.1Ω	.1Ω	TP	NC	†6100Ω		

† MEASURED FROM OUTPUT OF M1.
■ MEASURED FROM PIN 8 OF V1.
▲ MEASURED FROM PIN 3 OF V3.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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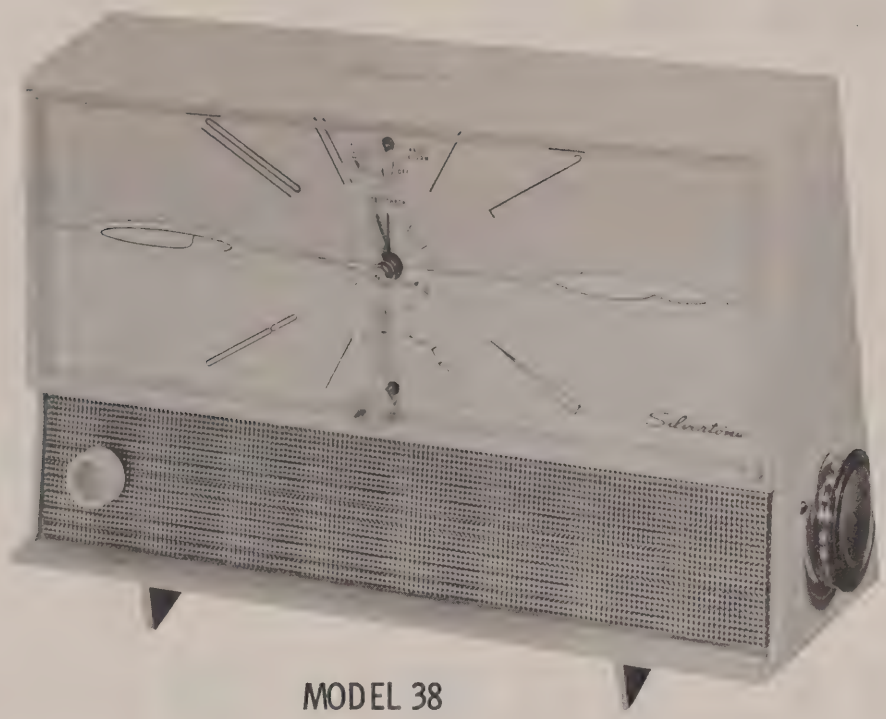
SHERWOOD MODELS SMX-A, -B, -S

PHOTOFACT® Folder with CIRCUITRACE®

EIA MEMBER

SILVERTONE MODELS 33, 34, 35, 35A, 36, 36A, 37, 37A, 38, 38A (Ch. 528.53600, 528.53630)

SILVERTONE MODELS 33, 34, 35, 35A, 36, 36A, 37, 37A, 38, 38A (Ch. 528.53600, 528.53630)



MODEL 38

SILVERTONE MODELS 33, 34, 35, 35A, 36, 36A, 37, 37A, 38, 38A (Ch. 528.53600, 528.53630)

TRADE NAME	Silvertone Models 33, 34 (Ch. 528.53630), 35, 35A, 36, 36A, 37, 37A, 38, 38A (Ch. 528.53600)
MANUFACTURER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock
POWER SUPPLY	110-120 Volts AC, 60 Cycles
RATING	26 Watts, .28 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	532 — 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A3, A4..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A5, A7..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	532KC	Tuning gang fully closed.	"	A6	"
4.		"	1400KC	Tune to 1400KC signal.	"	A7	Adjust for maximum output while rocking tuning gang.

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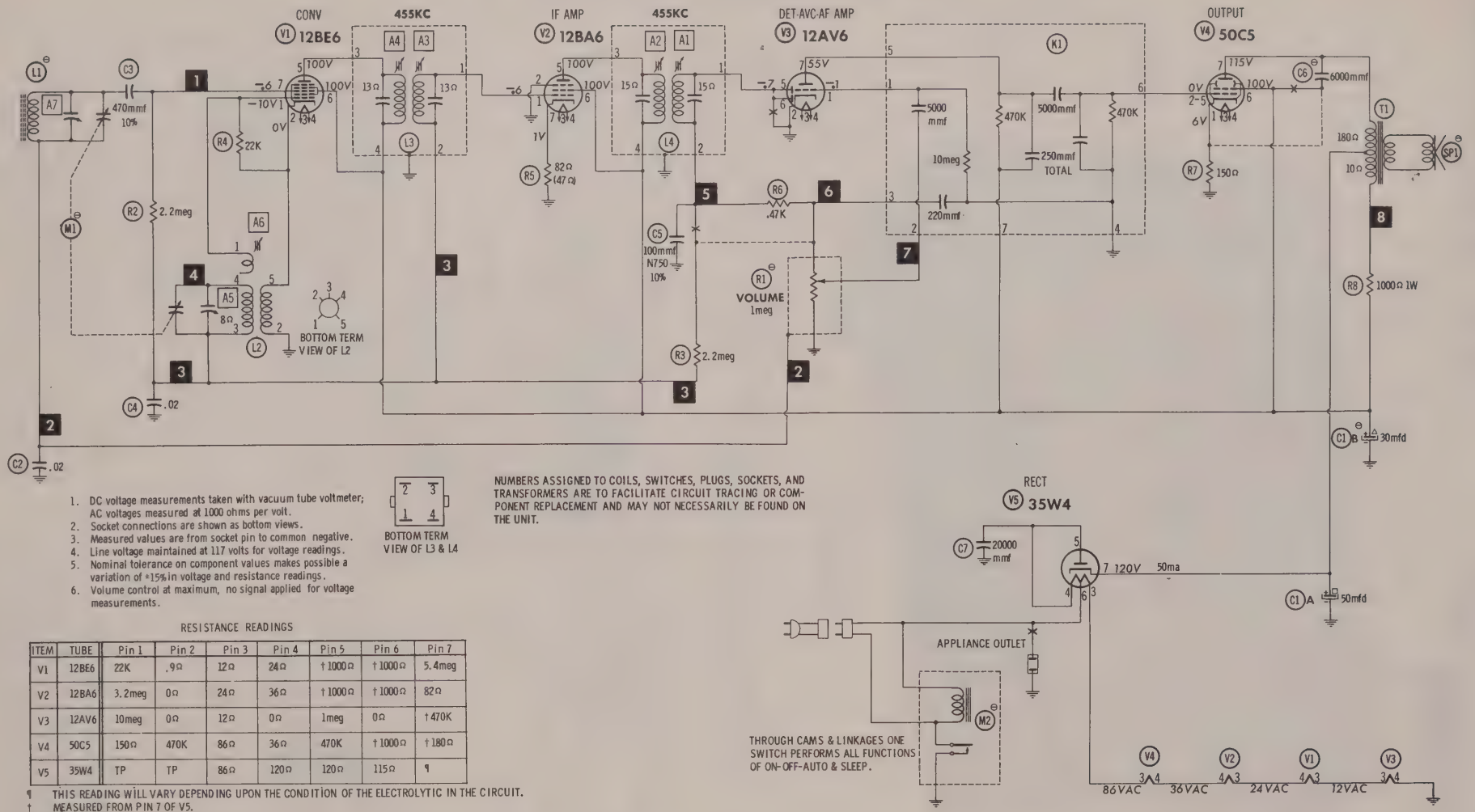
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

BOTTOM TERM VIEW OF L3 & L4

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	12Ω	24Ω	†1000Ω	†1000Ω	5.4meg
V2	12BA6	3.2meg	0Ω	24Ω	36Ω	†1000Ω	†1000Ω	82Ω
V3	12AV6	10meg	0Ω	12Ω	0Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	86Ω	36Ω	470K	†1000Ω	†180Ω
V5	35W4	TP	TP	86Ω	120Ω	120Ω	115Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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SILVERTONE MODELS 33, 34, 35, 35A, 36, 36A, 37, 37A, 38, 38A (Ch. 528.53600, 528.53630)

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det.-AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■50	150	18-49-5	PWH2-15-05	B0150 ‡	PWP213.1		PCL-2432	
B	▲30	150							Note 1

‡ Use printed circuit adaptor #55277 and 55278.
Note 1. Models #33 & #34 use 20mfd@150V in some applications.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S2
C3	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C4	.02 200V		P288N-02	DD-203	CUB2S2	4DP-2-203	GEM-412	2TM-S2
C5	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T1
C6	6000	Note 1	DAC-22	DD16-602	HVE16D6	6DP-1-602	GEM-626	6TM-D6
C7	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

Note 1. Models 33 & 34 use 5000mmf in this application (Part #20-91-0).

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	24-350-0					Volume, Note 1

Note 1. Chassis 528.53630 uses Part #24-348-0.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	2.2meg	
R3	2.2meg	
R4	22K	

* Alternate Value

ITEM No.	RATING	REMARKS
R5	82Ω	(47Ω) *
R6	47K	
R7	150Ω	

ITEM No.	RATING	REMARKS
R8	1000Ω 1W	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA	
K1	Audio Detector Coupling	220mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 10meg	13-32-3	Aerovox Centralab Sprague	PA-306 * PC-159 * DT-6 *

* Reverse Leads 5 & 6.

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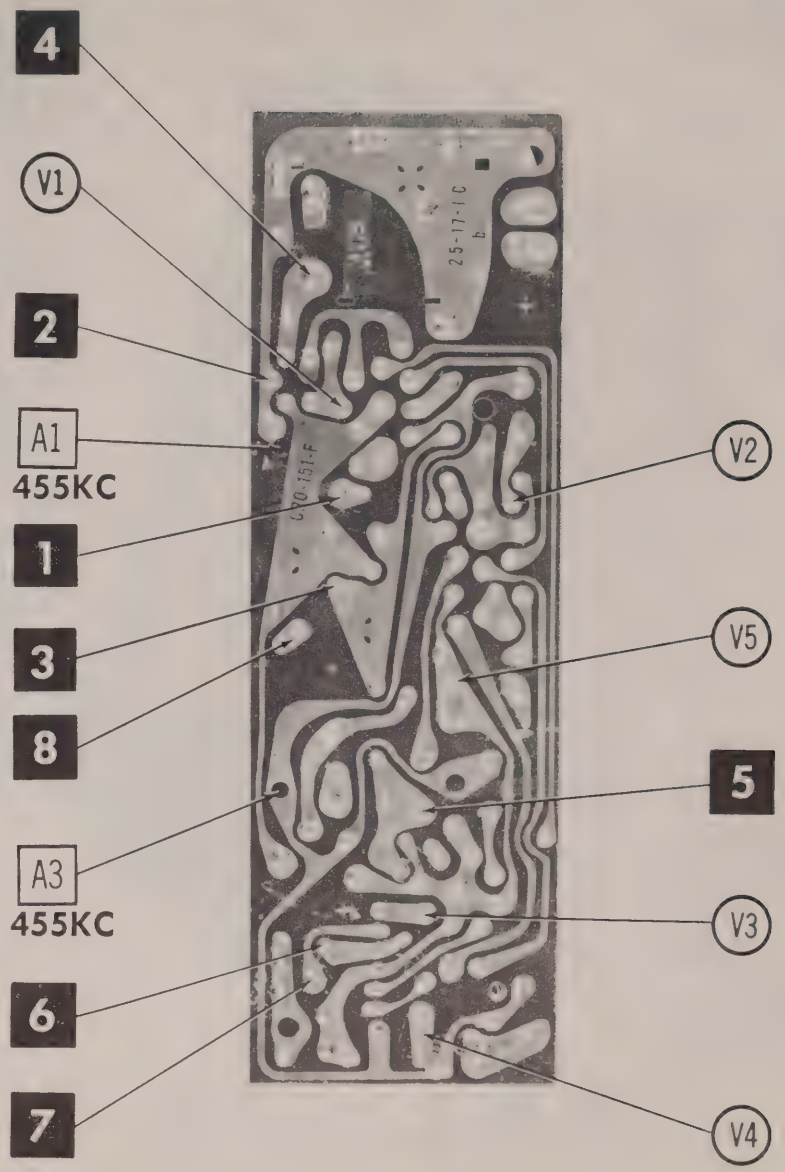
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



SILVERTONE MODELS 33, 34, 35, 35A, 36, 36A, 37, 37A, 38, 38A (Ch. 528.53600, 528.53630)

FOLDER 11

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SILVERTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	82-159-0 †						
L2	Osc. Coil	10-51-4						
L3	Input IF	10-112-2	16-6786	16-6786	BC-356	RF-4		
L4	Output IF	10-73-2	16-6787	16-6787	BC-357	RF-4		

† Chassis 528.53630 uses Part #82-12-1 in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω Tap @ 5%	3-4Ω	80-99-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	33-408-4 ①	4A1R	① Includes T1, Models 35, A, 36, A, 37, A, 38, A
	4"	PM	3-4Ω	33-407-4 ②		② Includes T1, Models 33, 34

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M1	Tuning Cap	19-81-2	2 Gang Chassis 528.53600
	Tuning Cap	19-80-2	2 Gang Chassis 528.53630
M2	Timer Ass'y.	84-7488	Complete, Chassis 528.53600
	Timer Ass'y.	84-7479	Complete, Chassis 528.53630
	Timer Ass'y.	59-150	Chassis 456/528.53600
	Timer Ass'y.	59-149	Chassis 456/528.53630

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

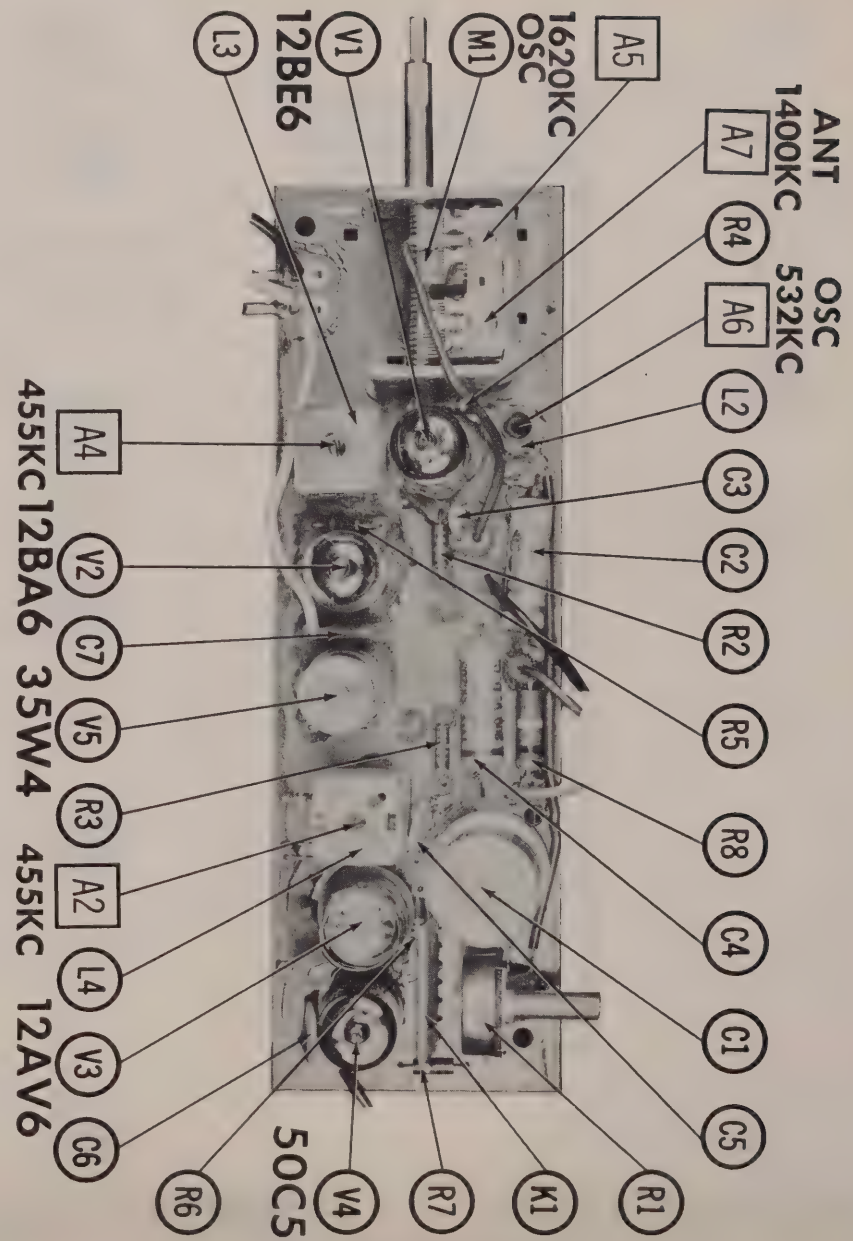
NAME	PART NO.	DESCRIPTION
Knob	52-1233-0	Tuning, Models 35, A, 36, A, 37, A, 38, A
Knob	52-1229-0	Tuning, Models 33, 34
Knob	52-1231-0	Volume, Models 35, A, 36, A, 37, A, 38, A
Knob	52-1228-0	Volume, Models 33, 34
Knob	52-784-0	Timer, Models 35, A, 36, A, 37, A, 38, A
Knob	52-1230-0	Timer, Models 33, 34
Button	52-1231-0	Snooze Alarm, Models 35, 36, 37, 38
Button	52-1232-0	Snooze Alarm, Models 35A, 36A, 37A, 38A
Window	48-163-1	Timer, Models 35, A, 36, A, 37, A, 38, A
Window	48-152-1	Timer, Models 33, 34
Cabinet	42-83-1	Model 35
Cabinet	42-84-1	Model 36
Cabinet	42-85-1	Model 37
Cabinet	42-86-1	Model 38
Cabinet	42-81-1	Model 33
Cabinet	42-82-1	Model 34
Cabinet	42-98-1	Model 35A
Cabinet	42-99-1	Model 36A
Cabinet	42-100-1	Model 37A
Cabinet	42-101-1	Model 38A

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



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EIA

SILVERTONE MODEL 220 (Ch. 528.53670)

SILVERTONE MODEL
220 (Ch. 528.53670)

TRADE NAME	Silvertone Model 220 (Ch. 528.53670)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	532KC — 1610KC
RATING	6MA@9 Volts (No Signal, Min. Volume) 25MA@9 Volts (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1, A2, A3..... GENERAL CEMENT #9440
A4, A7, A8..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A5..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A6..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mmf	High side to base of Converter. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.		Loop	1610KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	532KC	Tuning gang fully closed.	"	A5	"
4.		"	600KC	600KC	"	A6	"
5.		"	1400KC	1400KC	"	A7	Tighten A8, then adjust A7 for maximum output.
6.		"	"	"	"	A8	Adjust for maximum output.

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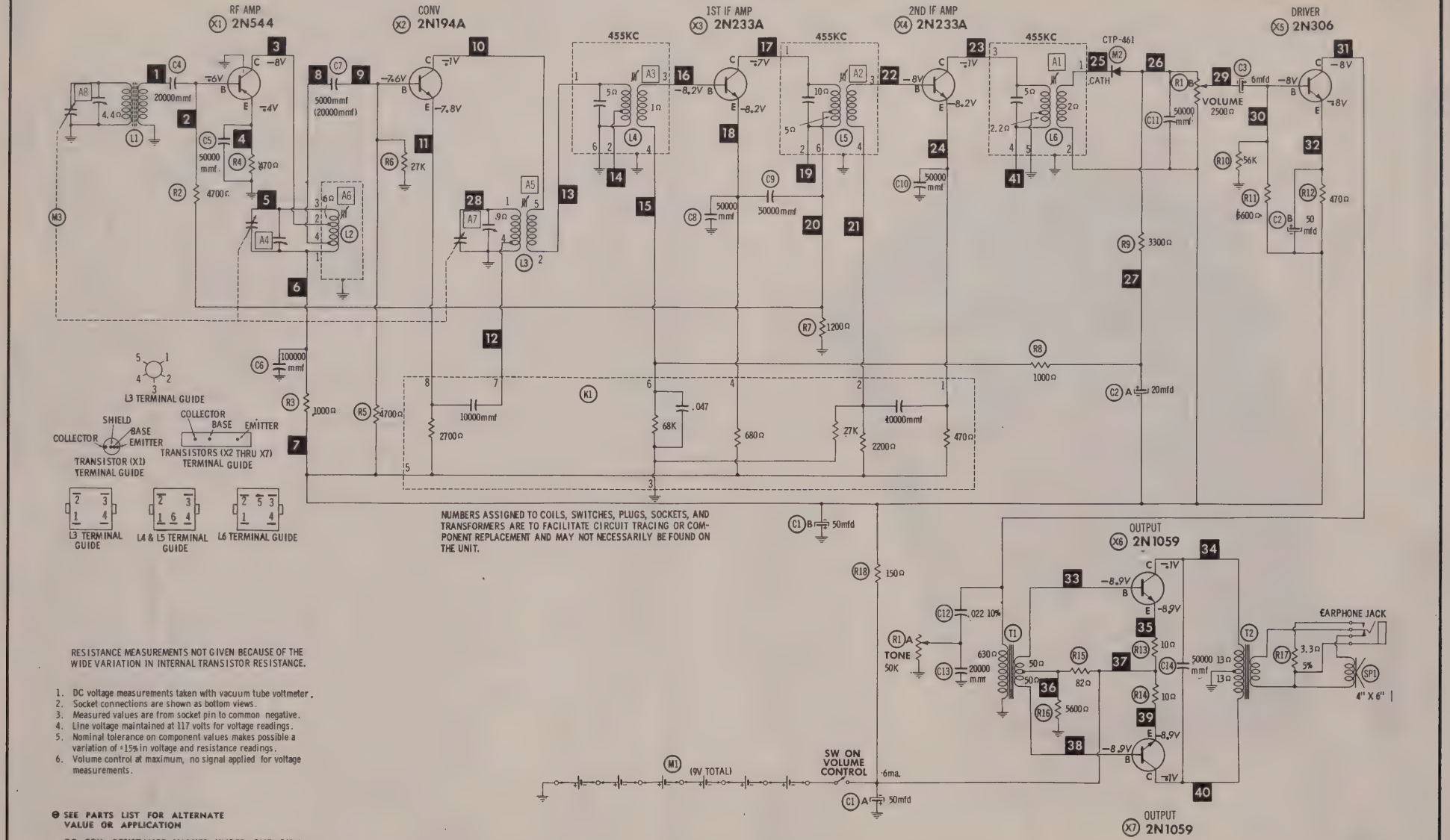
SET 475 FOLDER 12



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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SILVERTONE MODEL 220 (Ch. 528.53670)

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N544	RF Amplifier		2N544			PNP
X2	2N194A	Converter	2N438			2N194A	NPN
X3	2N233A	1st IF Amplifier	2N438			2N233A	NPN
X4	2N233A	2nd IF Amplifier	2N438			2N233A	NPN
X5	2N306	Driver	2N306	2N649			NPN
X6	2N1059	Output	2N444	2N649		2N1059	NPN } Matched
X7	2N1059	Output	2N444	2N649		2N1059	NPN } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	50	10	18-96-5						
B	50	10							
C2A	20	10	18-97-5	BCD10X5030		PET2365C		VLS-2245 *	
B	50	10							
C3	6	15	18-84-5	XPP-15006	EC6-25	TT25X5	ML6-15	TE-1153	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	50000		BPD-05	DD-503	H-05S5	DP-2-503	GP150	5HK-S50
C6	100000			DA-104	CUB2P1	DP-2-104	GEM-201	5HK-P10
C7	5000	(20000mmf) *	BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C8	50000		BPD-05	DD-503	H-05S5	DP-2-503	GP150	5HK-S50
C9	50000		BPD-05	DD-503	H-05S5	DP-2-503	GP150	5HK-S50
C10	50000		BPD-05	DD-503	H-05S5	DP-2-503	GP150	5HK-S50
C11	50000		BPD-05	DD-503	H-05S5	DP-2-503	GP150	5HK-S50
C12	.022 200V 10%		V84C2S22-10%		PM4S22	4DP-2-223	GEM-1612	2TM-S22
C13	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C14	50000		BPD-05	DD-503	H-05S5	DP-2-503	GP150	5HK-S50

* Alternate Value

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	50K	1/2	24-357-0					Tone
B	2500Ω							Volume
C	Switch							Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	4700Ω	
R3	1000Ω	
R4	470Ω	
R5	4700Ω	
R6	27K	
R7	1200Ω	

ITEM No.	RATING	REMARKS
R8	1000Ω	
R9	3300Ω	
R10	56K	
R11	5600Ω	
R12	470Ω	
R13	10Ω	

ITEM No.	RATING	REMARKS
R14	10Ω	
R15	82Ω	
R16	5600Ω	
R17	3.3Ω 5%	
R18	150Ω	

PRINTED BOARD

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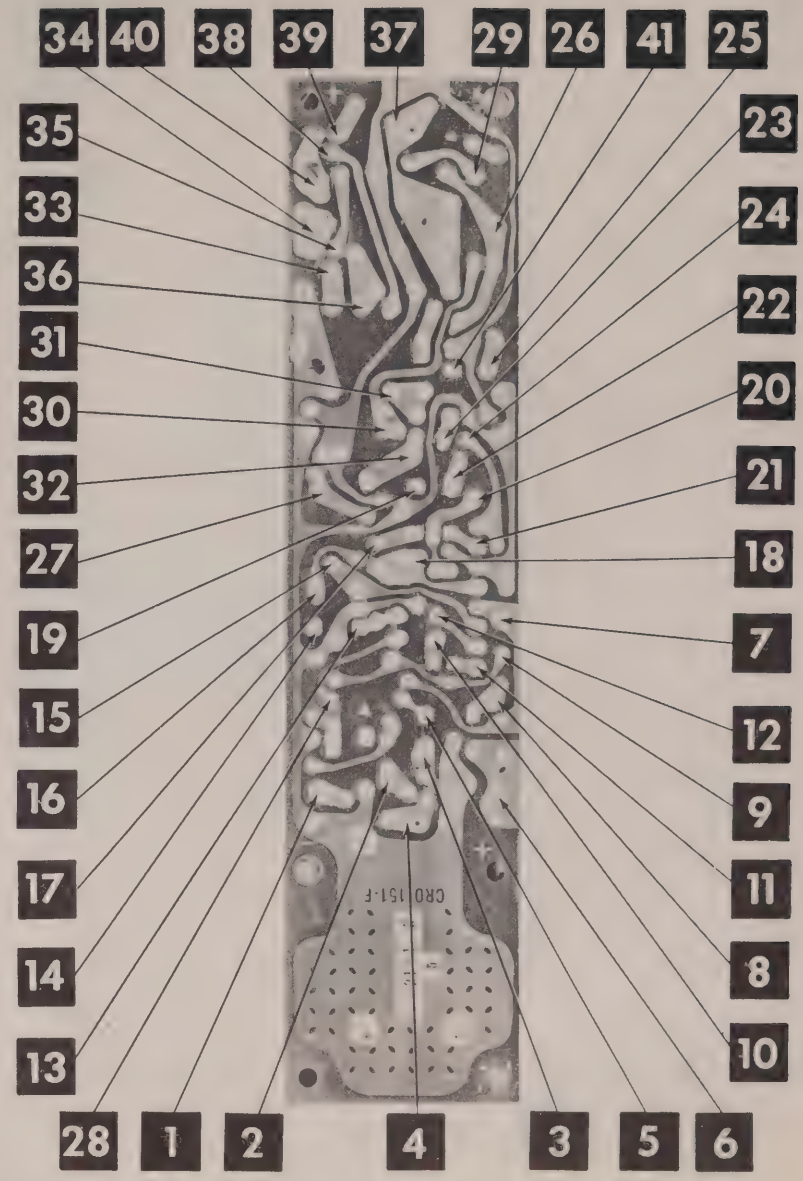


SILVERTONE MODEL
220 (Ch. 528.53670)

FOLDER 12

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SILVERTONE PART No.	REPLACEMENT DATA
K1	Converter IF Amp. Net.	10000mmf, 10000mmf, .047mfd, 470Ω, 680Ω, 2200Ω, 2700Ω, 27K, 68K	13-34-3	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SILVERTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	82-154-0						
L2	RF Coil	10-27-0						
L3	Osc. Coil	10-58-4						
L4	1st IF Trans.	10-131-2						
L5	2nd IF Trans.	10-124-2						
L6	3rd IF Trans.	10-125-2						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	80-111-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	300Ω CT	3-4Ω	80-104-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	33-414-4①	46A1	① Includes T2

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	6445		230		A100		H13R	6 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	CTP-461		1N60	1N295	1N295	Detector (Pigtail)

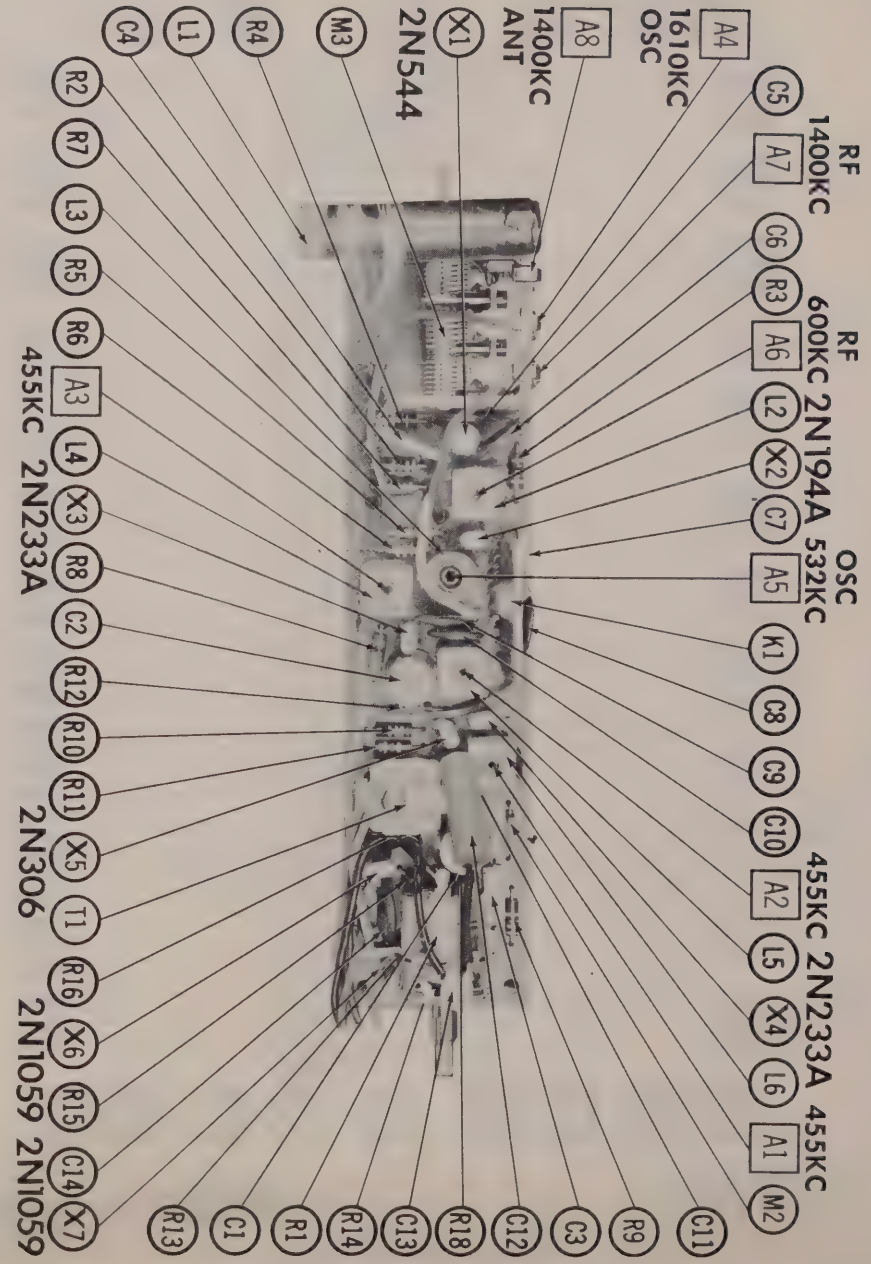
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap	19-31-3	3 Gang (Ant. 13—186mmf, RF 11—176mmf, Osc. 10—75mmf)

CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

CHASSIS—TOP VIEW



PHOTOFACT* Folder with CIRCUITRACE*

SILVERTONE MODEL 9226
(Ch. 528.53430)

SILVERTONE MODEL 9226
(Ch. 528.53430)

SILVERTONE MODEL 9226
(Ch. 528.53430)

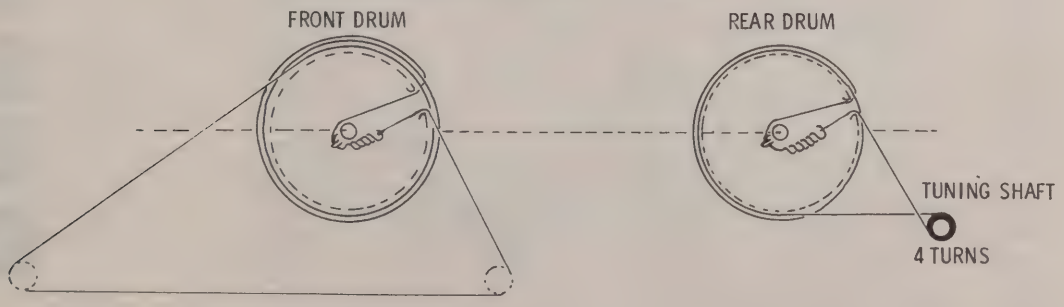
TRADE NAME	Silvertone Model 9226 (Ch. 528.53430, 528.53431)		
SUPPLIER	Sears, Roebuck & CO., 925 S. Homan Ave., Chicago, Illinois		
TYPE SET	Battery Operated 9 Band Transistorized AM Receiver		
POWER SUPPLY	12 Volts DC	RATING	8.5MA @ 12 Volts DC (No signal, Min. Volume) 9.5MA @ 12 Volts DC (Signal, Normal Volume)

TUNING RANGE

Band 1 Broadcast 535-1620KC	Band 6 30 Meters 9.2-10.6MC
Band 2 15 Meters 20.9-22.2MC	Band 7 37 Meters 4.0-8.1MC
Band 3 16 Meters 17.4-18.5MC	Band 8 75 Meters 1.8-4.1MC
Band 4 19 Meters 14.8-15.9MC	Band 9 Long Wave 195-415KC
Band 5 25 Meters 11.4-12.5MC	

DRIVE CORD STRINGING

DRUM SHOWN WITH GANG FULLY CLOSED

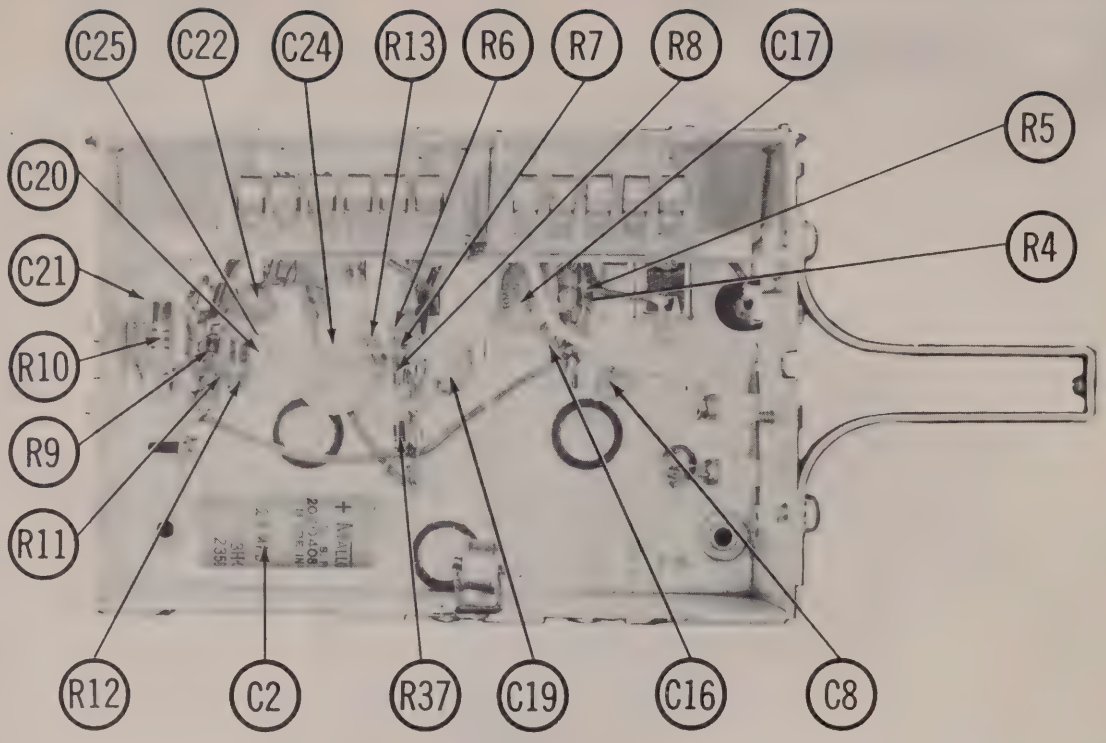


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

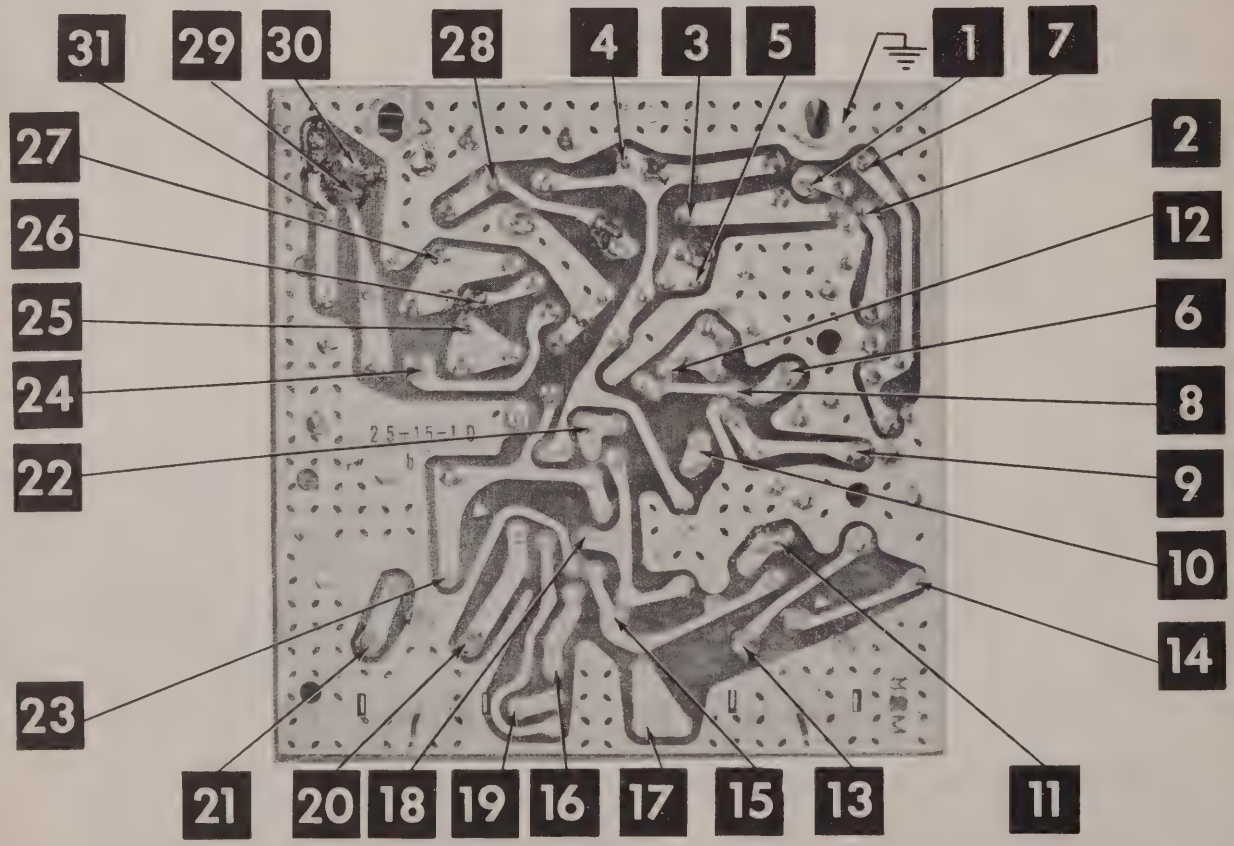
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JF324

SET 475 FOLDER 13

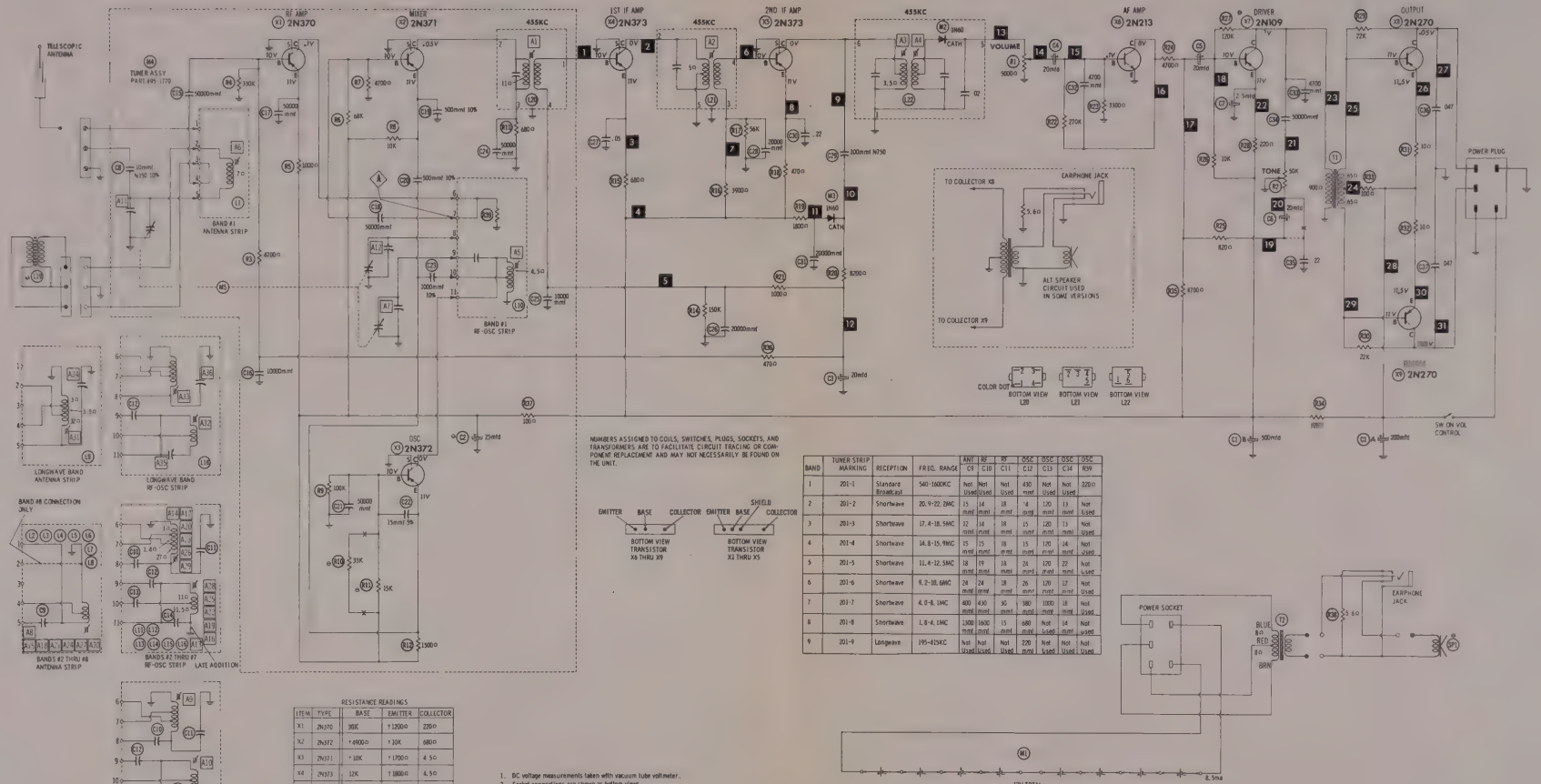


TUNER - BOTTOM VIEW



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

BAND	TUNER STRIP MARKING	RECEPTION	FREQ. RANGE	ANT C9	RF C10	RF C11	OSC C12	OSC C13	OSC C14	OSC R39
1	201-1	Standard Broadcast	540-1600KC	Not Used	Not Used	Not Used	430 mmf	Not Used	Not Used	220Ω
2	201-2	Shortwave	20.9-22.2MC	15 mmf	14 mmf	18 mmf	4 mmf	120 mmf	13 mmf	Not Used
3	201-3	Shortwave	17.4-18.5MC	12 mmf	14 mmf	18 mmf	15 mmf	120 mmf	13 mmf	Not Used
4	201-4	Shortwave	14.8-15.9MC	15 mmf	15 mmf	18 mmf	15 mmf	120 mmf	24 mmf	Not Used
5	201-5	Shortwave	11.4-12.5MC	18 mmf	19 mmf	18 mmf	24 mmf	120 mmf	22 mmf	Not Used
6	201-6	Shortwave	9.2-10.6MC	24 mmf	24 mmf	18 mmf	26 mmf	120 mmf	27 mmf	Not Used
7	201-7	Shortwave	6.0-6.1MC	400 mmf	430 mmf	30 mmf	980 mmf	1000 mmf	18 mmf	Not Used
8	201-8	Shortwave	1.8-4.1MC	1300 mmf	1600 mmf	15 mmf	680 mmf	Not Used	14 mmf	Not Used
9	201-9	Longwave	195-415KC	Not Used	Not Used	Not Used	220 mmf	Not Used	Not Used	Not Used

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N370	30K	†1200Ω	220Ω
X2	2N372	*4900Ω	†10K	680Ω
X3	2N371	*10K	†1700Ω	4.5Ω
X4	2N373	12K	†1800Ω	4.5Ω
X5	2N373	*3500Ω	†590Ω	3.5Ω
X6	2N213	3300Ω	0Ω	†9500Ω
X7	2N109	*10K	†330Ω	900Ω
X8	2N270	†365Ω	†30Ω	8Ω
X9	2N270	†365Ω	†30Ω	8Ω

ALL MEASUREMENTS TAKEN IN "BROADCAST" POSITION. TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM JUNCTION OF C1A AND R34.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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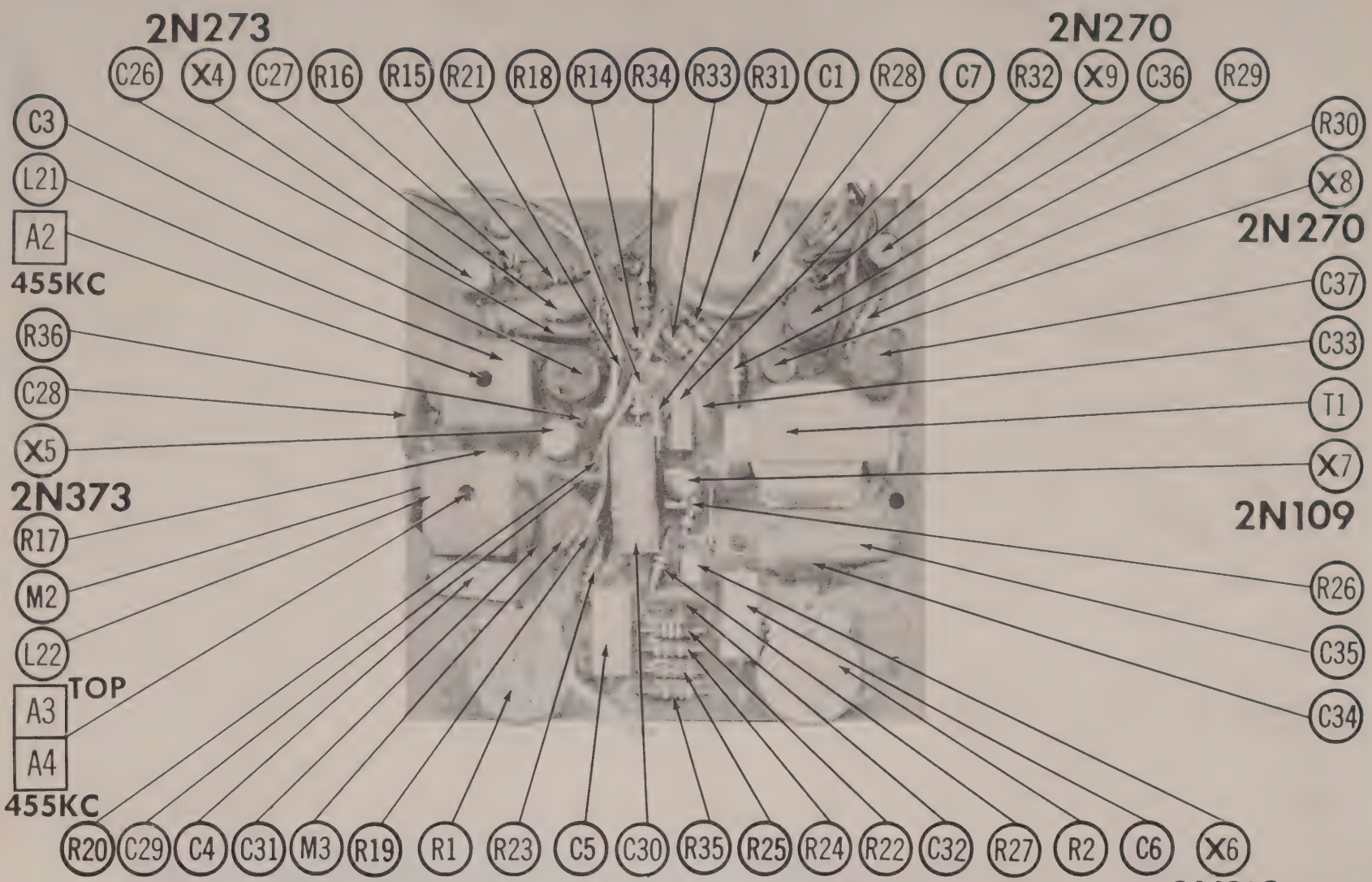
SILVERTONE MODEL 9226
(Ch. 528.53430)



PRINTED BOARD - TOP VIEW

SILVERTONE
MODEL 9226

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set tuning gang fully closed and set pointer at 0 on Log Scale.
During alignment, check to make sure that on bands 2, 3, 4, 5 and 6 the image frequencies appear on the low side of the input signal throughout the entire band (On these bands the Oscillator is on the low side of the received signal). On bands 1, 7, 8 and 9 the image frequencies should appear on the high side of the input signal throughout the band.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A1, A2, A3, A4 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A5, A6, A8, A9, A10, A13 thru A33 ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547
A7, A11, A12, A34 thru A36 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to point (A). Low side to chassis.	455KC (400~ Mod.)	1	0 on Log Scale	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	600KC	"	14 on Log Scale	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	"	82 on Log Scale	"	A7	Adjust for maximum output. Repeat steps 2 and 3 until oscillator covers range.
4.	Fig. 1	High side thru dummy to whip antenna socket with whip removed. Low side to chassis.	1.9MC	8	14 on Log Scale	"	A8, A9, A10	Adjust for maximum output.
5.	"	"	3.7MC	"	3.7MC signal	"	A11, A12	Adjust for maximum output. Repeat steps 4 and 5 until oscillator covers proper range.
6.	"	"	3.995MC	7	0 on Log Scale	"	A13	Adjust for maximum output.
7.	"	"	4.18MC	"	14 on Log Scale	"	A14, A15	"
8.	"	"	9.3MC	6	0 on Log Scale	"	A16	"
9.	"	"	9.34MC	"	14 on Log Scale	"	A17, A18	"
10.	"	"	11.4MC	5	0 on Log Scale	"	A19	"
11.	"	"	11.44MC	"	14 on Log Scale	"	A20, A21	"
12.	"	"	14.8MC	4	0 on Log Scale	"	A22	"
13.	"	"	14.83MC	"	14 on Log Scale	"	A23, A24	"
14.	"	"	17.4MC	3	0 on Log Scale	"	A25	"
15.	"	"	17.43MC	"	14 on Log Scale	"	A26, A27	"
16.	"	"	20.9MC	2	0 on Log Scale	"	A28	"
17.	"	"	20.94MC	"	14 on Log Scale	"	A29, A30	"
18.		Loop	214.8KC	9	14 on Log Scale	"	A31, A32, A33	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
19.	"	"	382KC	"	82 on Log Scale	"	A34, A34, A36	Adjust for maximum output. Repeat steps 12 and 13.

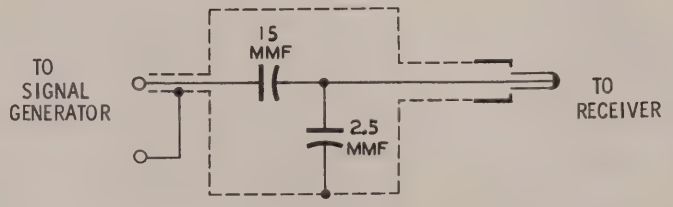


FIG. 1

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N370	RF Amplifier		2N370		2N370	PNP
X2	2N372	Mixer		2N372		2N372	PNP
X3	2N371	Oscillator		2N371		2N371	PNP
X4	2N373	1st IF Amplifier		2N373		2N373	PNP
X5	2N373	2nd IF Amplifier		2N373		2N373	PNP
X6	2N213	AF Amplifier			2N362	2N213	PNP
X7	2N109 ①	Driver		2N109	2N362	2N109	NPN
X8	2N270	Output		2N270	2N360	2N270	PNP
X9	2N270	Output		2N270	2N360	2N270	PNP

① Some versions may use 2N217 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■200	15	18-12-4	AFH2-02-75		PWP201.13		PCLS-2156 *	
B	▲500	15							
C2	25	25		PRS25V25	BBR25-25	TT25X25	TD-25-25	TVA-1205	Note 1
C3	20	15	18-89-5	BCD1520	ECPA410	PET1570	ML20-15	TE-1157	
C4	20	15	18-82-5	PWE25020	EC20-15	TT15X20	ML20-15	TE-1157	
C5	20	15	18-82-5	PWE25020	EC20-15	TT15X20	ML20-15	TE-1157	
C6	20	15	18-82-5	PWE25020	EC20-15	TT15X20	ML20-15	TE-1157	
C7	2.5	15	18-87-5	PWE25003	EC3-15	TT12X3		TE-1150	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Some versions may use 15 volt unit in this application (Part #13H-011).

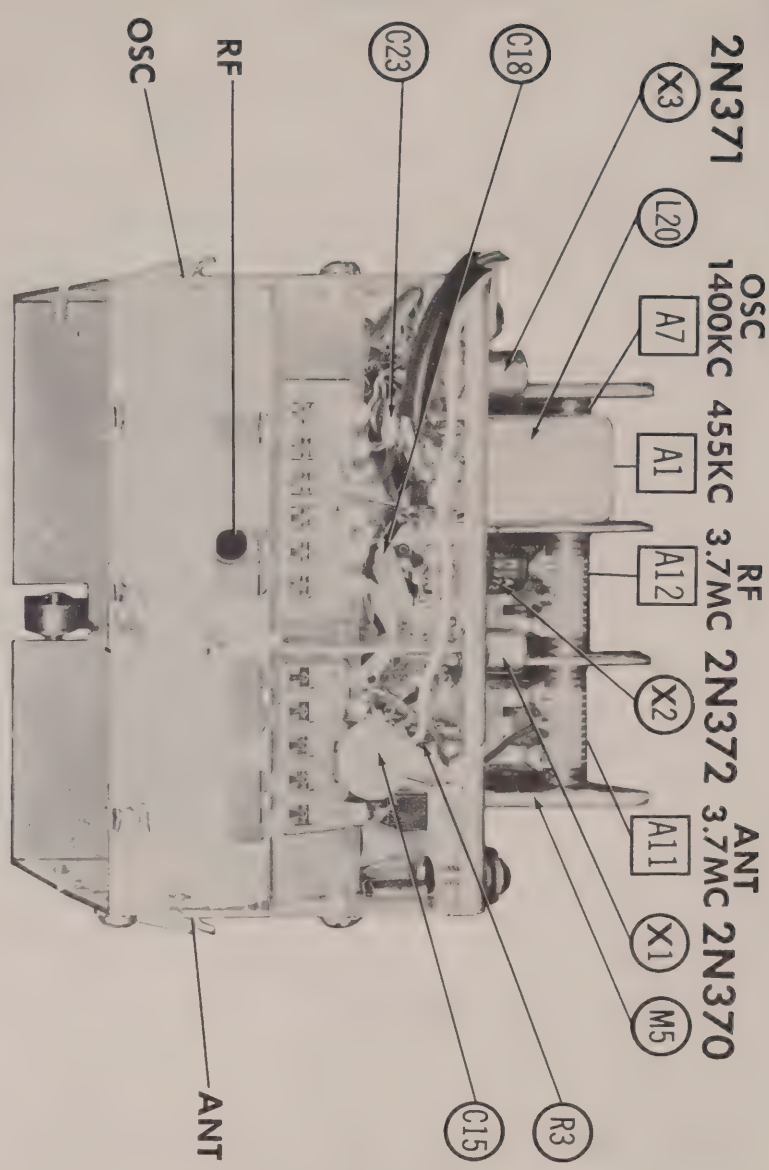
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	10 N150 10%	#13L8H100F				CCTN-100 *		
C15	50000		BPD-05	DDA-503	H-05S5	4DP-3-503	TA-150	TG-S50
C16	10000		BPD-01	DD-103	H-05S1	CCD-103	TA-110	TG-S10
C17	50000		BPD-05	DDA-503	H-05S5	4DP-3-503	TA-150	TG-S50
C18	50000		BPD-05	DDA-503	H-05S5	4DP-3-503	TA-150	TG-S50
C19	500 10%		DI-500	MD-501		CCS-501		5GA-T5S 10%*
C20	500 10%		DI-500	MD-501		CCS-501		CCS-501
C21	50000		BPD-05	DDA-503	H-05S5	4DP-3-503	TA-150	TG-S50
C22	15 5%			DTZ-15	C10Q15C	CM-20B-150J	CN0-415	5TCC-Q15S 5%*
C23	1000 10%		DI-1000			CCS-102	JL-210	5GA-D1S 10%*
C24	50000		BPD-05	DDA-503	H-05S5	4DP-3-503	TA-150	5HK-S5
C25	10000		BPD-01	DD-103	H-05S1	CCD-103	B-110	5HK-S1
C26	20000		BPD-02	DD-203	H-05S2	CCD-203	B-120	5HK-S2
C27	.05 12V		P288N-05	DA-503	H-05S5	1DP-2-503	TA-150	5HK-S5
C28	20000		BPD-02	DD-203	H-05S2	CCD-203	B-120	5HK-S2
C29	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	5TCU-T1
C30	.22 100V		P288N-22		WMF1P22E	1DP-3-224	GTM-1022	2TM-P22
C31	20000		BPD-02	DD-203	H-05S2	CCD-203	B-120	5HK-S2
C32	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C33	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C34	50000		BPD-05	DDA-503	H-05S5	4DP-3-503	TA-150	5HK-S5
C35	.22 100V		P288N-22		WMF1P22E	1DP-3-224	GTM-1022	2TM-P22
C36	.047 200V		P2151N-047	DF-503	BC2S47J	4DP-3-473	ACE6147	2SE-S47
C37	.047 200V		P2151N-047	DF-503	BC2S47J	4DP-3-473	ACE6147	2SE-S47

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

TUNER— SIDE VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	5000Ω	½	24-336-0	B-11	A47-5000-S	Q13-114	U12	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Off-On
R2A	50K	½	24-187-2	B-31	A47-50K-S	Q11-123	U-35	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	4700Ω	
R4	330K	
R5	1000Ω	
R6	68K	
R7	4700Ω	
R8	10K	
R9	100K	
R10	33K	Note 1
R11	15K	Note 1
R12	1500Ω	
R13	680Ω	
R14	150K	

ITEM No.	RATING	REMARKS
R15	680Ω	
R16	3900Ω	
R17	56K	
R18	470Ω	
R19	1800Ω	
R20	8200Ω	
R21	1000Ω	
R22	270K	
R23	3300Ω	
R24	4700Ω	
R25	820Ω	
R26	10K	

ITEM No.	RATING	REMARKS
R27	120K	
R28	220Ω	
R29	22K	
R30	22K	
R31	10Ω	
R32	10Ω	
R33	100Ω	
R34	120Ω	
R35	4700Ω	
R36	470Ω	
R37	100Ω	
R38	5.6Ω	

Note 1. Some versions may use a single to replace R10 and R11 (Part #12TAE103K)

COILS (RF)

ITEM No.	USE	SILVERTONE PART No.	NOTES
L1	Antenna Coil	31T3291-202-1	BC Band 1
L2	Antenna Coil	31T3291-201-2	SW Band 2
L3	Antenna Coil	31T3291-201-3	SW Band 3
L4	Antenna Coil	31T3291-201-4	SW Band 4
L5	Antenna Coil	31T3291-201-5	SW Band 5
L6	Antenna Coil	31T3291-201-6	SW Band 6
L7	Antenna Coil	31T3291-201-7	SW Band 7
L8	Antenna Coil	31T3291-201-8	SW Band 8
L9	Antenna Coil	31T3291-201-9	LW Band 9

ITEM No.	USE	SILVERTONE PART No.	NOTES
L10	RF & Osc. Coils	31T3311-201-1	BC Band 1
L11	RF & Osc. Coils	31T3311-201-2	SW Band 2
L12	RF & Osc. Coils	31T3311-201-3	SW Band 3
L13	RF & Osc. Coils	31T3311-201-4	SW Band 4
L14	RF & Osc. Coils	31T3311-201-5	SW Band 5
L15	RF & Osc. Coils	31T3311-201-6	SW Band 6
L16	RF & Osc. Coils	31T3311-201-7	SW Band 7
L17	RF & Osc. Coils	31T3311-201-8	SW Band 8
L18	RF & Osc. Coils	31T3311-201-9	LW Band 9

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		SILVERTONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L19	Loopstick	82-150-0						①
L20	1st IF Trans.	34A797						
L21	2nd IF Trans.	10-106-2						
L22	3rd IF Trans.	10-107-2						

① Part of Antenna Assembly Part #84-7158.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	:1	80-88-1	TR-66 ①			TR-66 ①		① Bend tabs down.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	350Ω CT	3-4Ω	80-89-1							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	4" x 6"	PM	3-4Ω	33-393-4 ①	46A1	① Includes T2.

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			230 ①		A100 ①		230 ①	① 8 Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60		1N60	1N60	1N60	Det. (Part of 3rd IF Trans.)
M3	1N60		1N60	1N60	1N60	AVC (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Tuner	95-177-0	Complete
M5	Tuning Cap.	136015	3 Gang: (Ant. 27-355mmf, RF 23-352mmf, Osc. 27-359mmf)
	Antenna	82-149-0	Telescopic

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-1209-0	Tuning, Volume, Tone
Knob	52-1142-0	Band Selector
Pointer	52-166-1	
Dial Scale	67-656-0	
Cabinet	42-66-1	
Handle	49-421	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder

EIA MEMBER

TRAV-LER MODEL TP-500

TRAV-LER
MODEL TP-500

TRAV-LER
MODEL TP-500

TRADE NAME	Trav-Ler Model TP-500
MANUFACTURER	Trav-Ler Radio Corp., 571 W. Jackson Blvd., Chicago 6, Illinois
TYPE SET	Battery Operated Portable Transistorized Phono Amplifier With 45 RPM Manual Record Player
POWER SUPPLY	6 Volts DC RATING 6.6 MA @ 6 Volts DC (No Signal)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JR494

DATE 2-60 SET 475 FOLDER 14

SET 475 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N403	Preamplifier		2N408		2N139	PNP
X2	2N403	Driver		2N408		2N139	PNP
X3	2N60 *	Output			2N632	2N321	PNP ⎫ Matched
X4	2N60 *	Output			2N632	2N321	PNP ⎭ Pair

* Alternate Type 2N50

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	100	10	EC-82	SRE12V100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C2	100	10	EC-82	SRE12V100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C3	10	10	EC-83	XPP-10010	NLW10-10	TT12X10	ML10-15	TE-1114	
C4	100	10	EC-82	SRE12V100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C5	10	10	EC-83	XPP-10010	NLW10-10	TT12X10	ML10-15	TE-1114	
C6	100	10	EC-82	SRE12V100	NLW100-10	TT15X100	ML100-15	TE-1119.3	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C8	2200		BPD-0022	DD-222	BYA10D22	CCD-222	GP222	5HK-D22
C9	50000	Note 1	BPD-05	DD-503	H-05S5	IDP-2-503	GP150	5HK-S50
C10	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	GP247	5HK-D47
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg		VC-179	F1-51		† QJ-948	■ UE4076	Tone
R1B	1meg			R2-52				Volume

† "Concentrikit" Equivalent: K-2 kit with base elements & shafts: B11-137, P1-020 (Panel) B13-137, R1-103 (Rear) (Not available as a factory assembled unit)

■ "STA-LOC" equivalent: FB16L, RU16A, OF625, IS1062

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

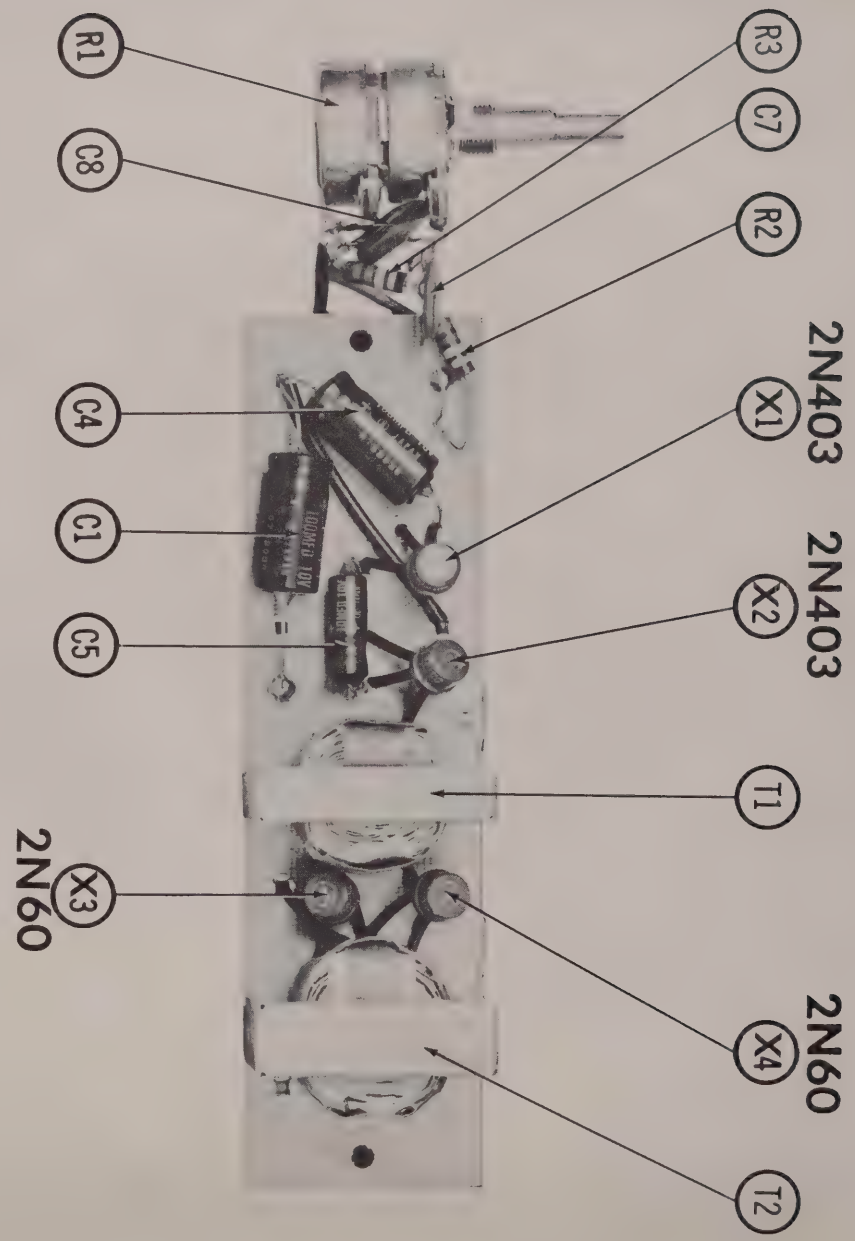
ITEM No.	RATING	REMARKS
R2	150K	
R3	150K	
R4	10K	
R5	39K	
R6	2200Ω	

ITEM No.	RATING	REMARKS
R7	82K	(68K) *
R8	390Ω 5%	
R9	3900Ω	
R10	18K	
R11	390Ω 5%	

ITEM No.	RATING	REMARKS
R12	3300Ω	
R13	100Ω	
R14	4.7Ω 5%	(5Ω) *
R15	470Ω	
R16	470Ω	

* Alternate value

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	AT-48						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA								NOTES
	PRI.	SEC.	TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.		
T2	350Ω CT	3-4Ω	AT-49								

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRAV-LER PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	SPK-85	46A1	

BATTERIES

ITEM No.	VOLTAGE	TRAV-LER PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			230		A100		M13R	4 Required

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA									
	TRAV-LER PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M2		93T-1	Not Req.	51-1	Not Req.				

PHONO NEEDLE

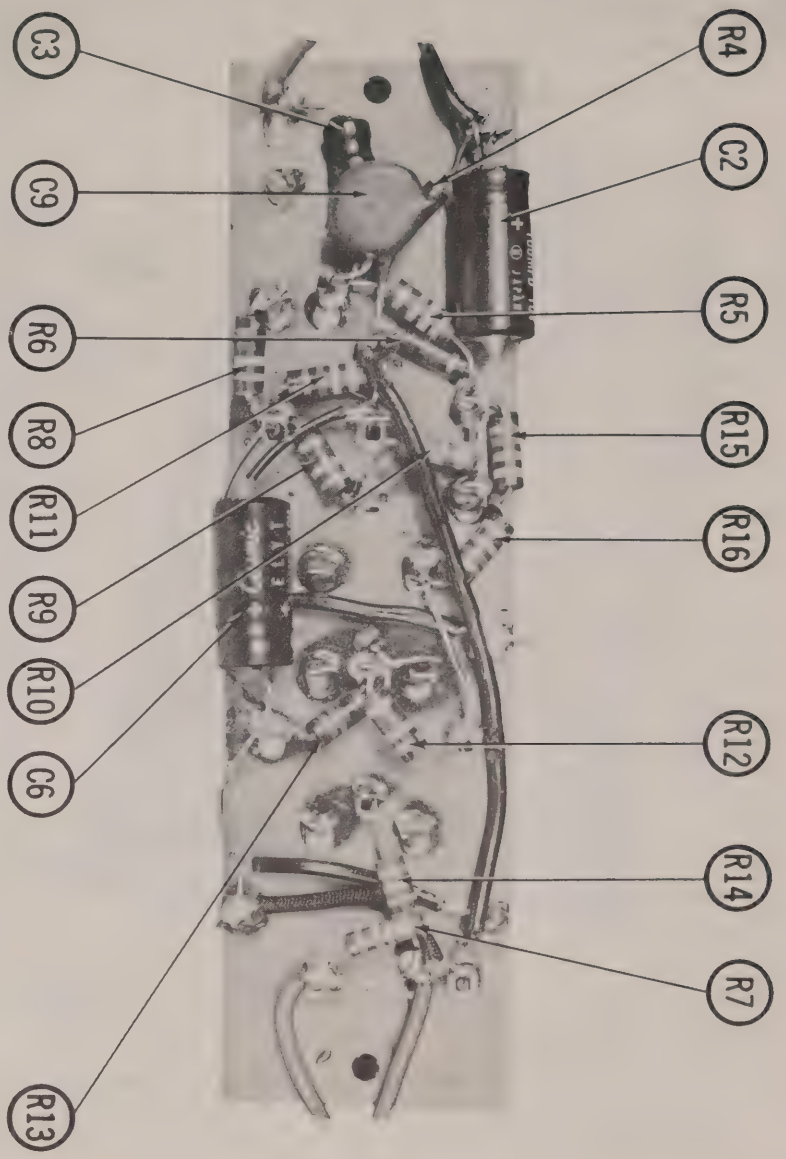
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

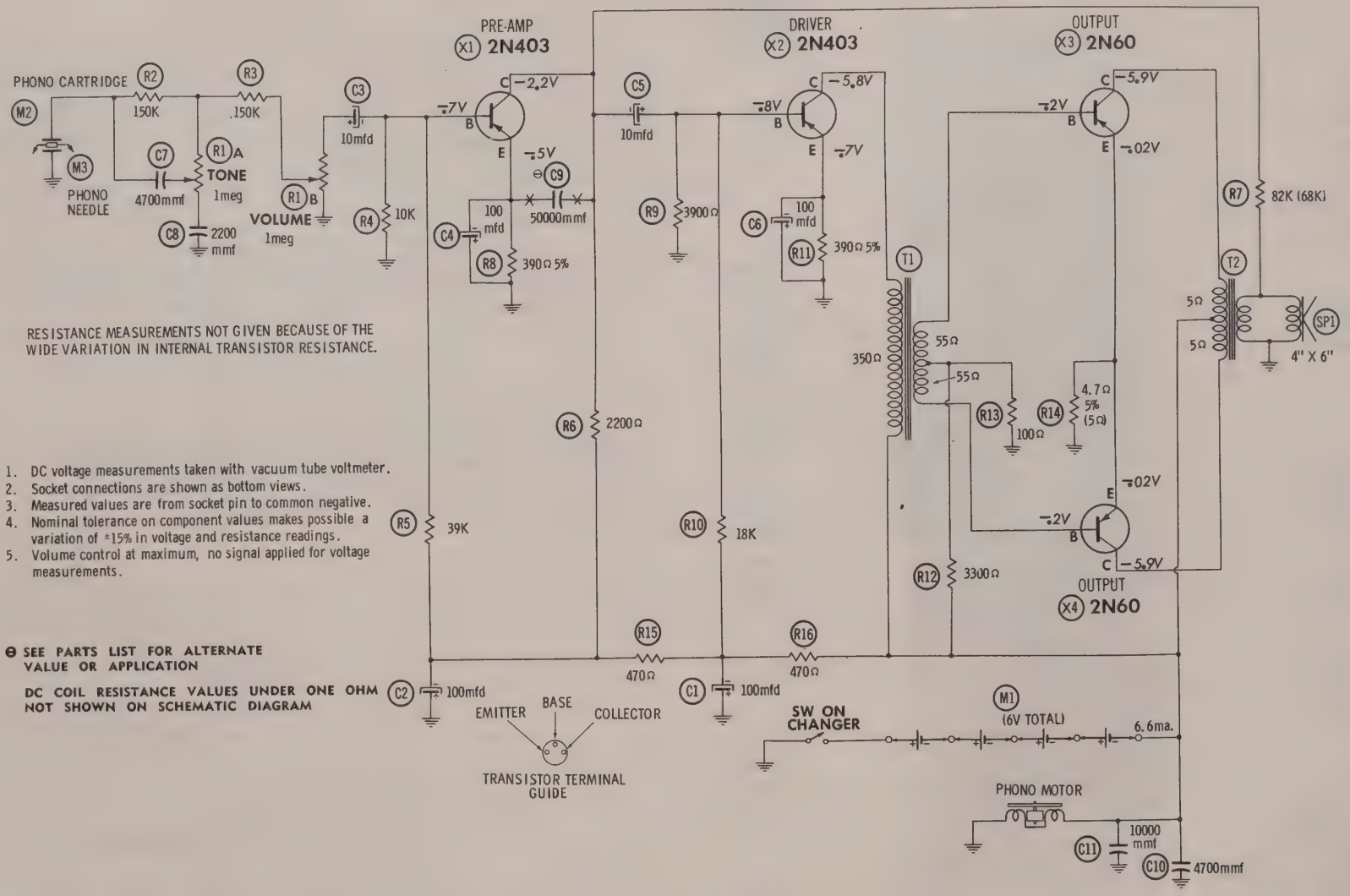
ITEM No.	REPLACEMENT DATA			REMARKS
	TRAV-LER PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M3			E-39 † or E-39DD ♦	† Jewel ♦ Diamond

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW





RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TRAV-LER MODEL TP-500

PHOTOFACT® Folder with CIRCUITRACE®

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

TRUETONE MODEL DC3052

TRUETONE MODEL DC3052

TRADE NAME	Truetone Model DC3052
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Mo.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	525 - 1670KC
RATING	4.8MA @ 9 Volts DC (No Signal, Min. Volume) 10MA @ 9 Volts DC (Signal, Normal Volume)

TRUETONE MODEL DC3052

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A3 ..... GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537
A4, A6 ..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2526

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2 A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1670KC	"	"	A4	"
3.		"	525KC	Tuning gang fully closed	"	A5	"
4.		"	1400KC	Tune to 1400KC signal	"	A6	"
5.		"	600KC	Tune to 600KC signal	"	A7	"

DISASSEMBLY

1. Open rear cover and remove 2 chassis mounting screws.
2. Remove earphone jack nut.
3. Unsolder speaker leads.
4. Remove chassis from cabinet.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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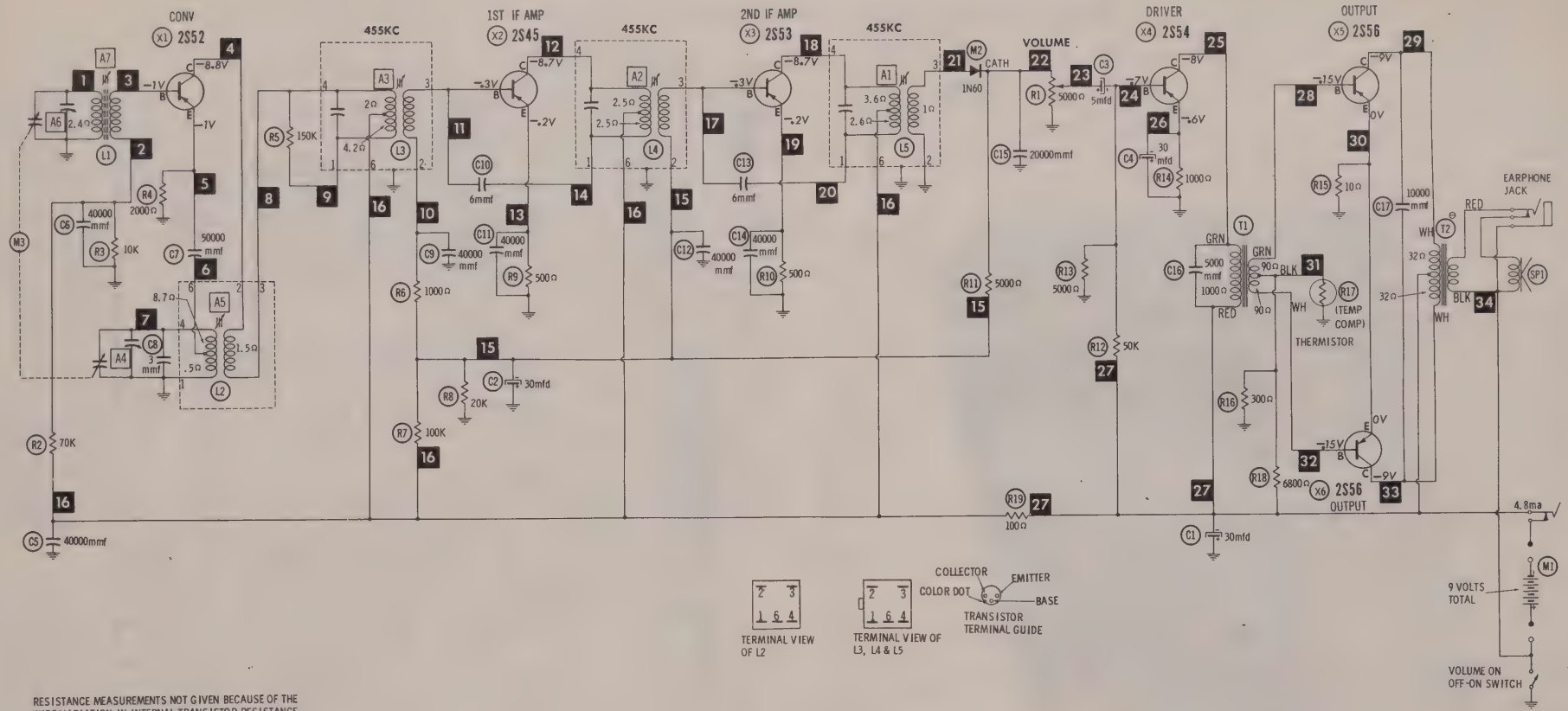
JF504

SET 475 FOLDER 15



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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TRUETONE MODEL DC3052

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52	Converter		2N412	2N486	2N412	PNP
X2	2S45	1st IF Amplifier		2N410	2N483	2N410	PNP
X3	2S53	2nd IF Amplifier		2N410	2N483	2N410	PNP
X4	2S54	Driver		2N408	2N362	2N408	PNP
X5	2S56	Output		2N408	2N362	2N408	PNP } Matched
X6	2S56	Output		2N408	2N362	2N408	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	10		XPP-10030	NLW30-15	TT15X30	ML30-15	TE-1158	
C2	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C3	5	6		XPP-6005	NLW5-6	TT6X5	ML5-6	TE-1084	
C4	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	40000			DA-503	H-05S5		TA-150	TG-S50
C6	40000			DA-503	H-05S5		TA-150	TG-S50
C7	50000			DA-503	H-05S5		TA-150	TG-S50
C8	3		NPO-SI 3.0	TCZ-3R3	C10V3	CCTO-3R3	CNO-533	10TCC-V33
C9	40000			DA-503	H-05S5		TA-150	TG-S50
C10	6		NPO-SI 6.8	TCZ-6R8	C10V6C	CCTO-6R8	CNO-568	10TCC-V68
C11	40000			DA-503	H-05S5		TA-150	TG-S50
C12	40000			DA-503	H-05S5		TA-150	TG-S50
C13	6		NPO-SI 6.8	TCZ-6R8	C10V6C	CCTO-6R8	CNO-568	10TCC-V68
C14	40000			DA-503	H-05S5		TA-150	TG-S50
C15	20000			DA-203	H-05S2		TA-120	TG-S20
C16	5000			DM-502	H-05D5	CCD-502	TA-250	TG-D50
C17	10000			DM-103	H-05S1		TA-110	TG-S10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	V-500S					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	70K	
R3	10K	
R4	2000Ω	
R5	150K	
R6	1000Ω	
R7	100K	

ITEM No.	RATING	REMARKS
R8	20K	
R9	500Ω	
R10	500Ω	
R11	5000Ω	
R12	50K	
R13	5000Ω	

ITEM No.	RATING	REMARKS
R14	1000Ω	
R15	10Ω	
R16	300Ω	
R17	(Temp. Comp.)	#M8601
R18	6800Ω	
R19	100Ω	

Truetone Part Number.

PRINTED BOARD

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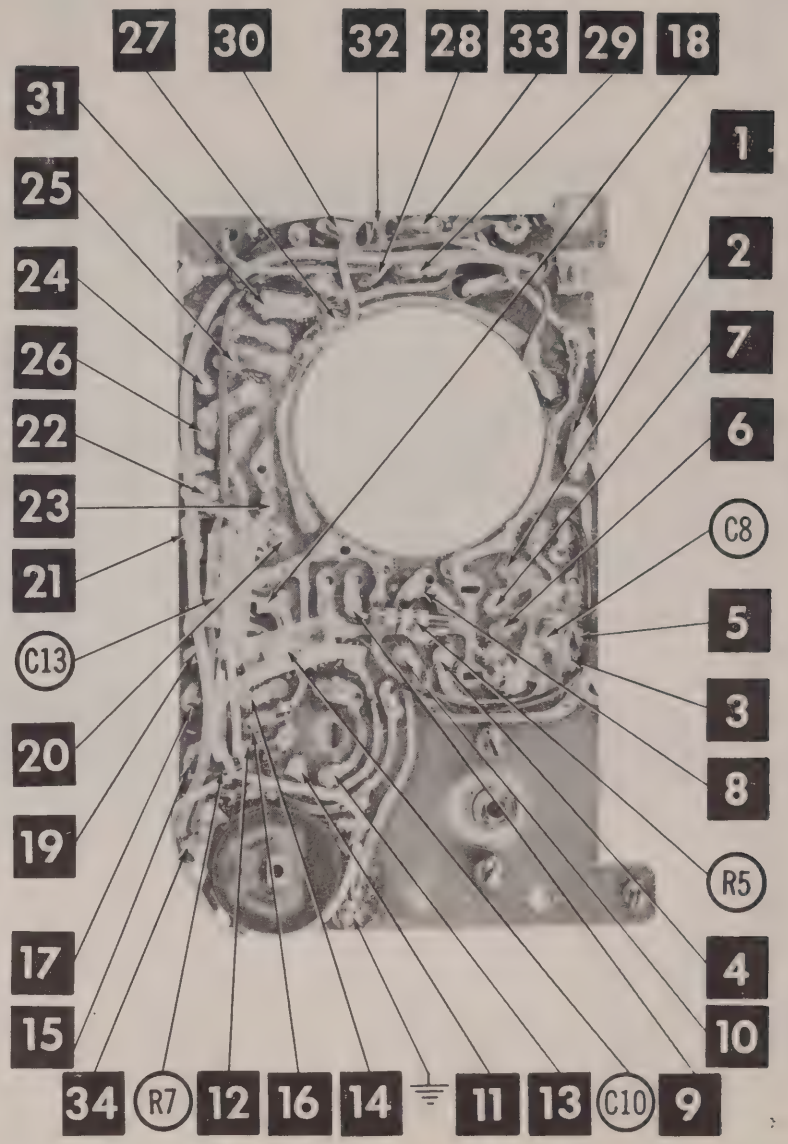


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		TRUETONE PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	LA-502						
L2	Osc. Coil	7030						
L3	1st IF Trans.	8511						
L4	2nd IF Trans.	8503						
L5	3rd IF Trans.	8518						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	1	T-453						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1100Ω CT	11Ω	OT-503 ①	TR-105			TA-26	TR-105		① Alternate Part #OT-501

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	2½"	PM	10-12Ω	PM-224A		

BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	3B6469		2U6		216		M-1604	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TRUETONE PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60	1N60	1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

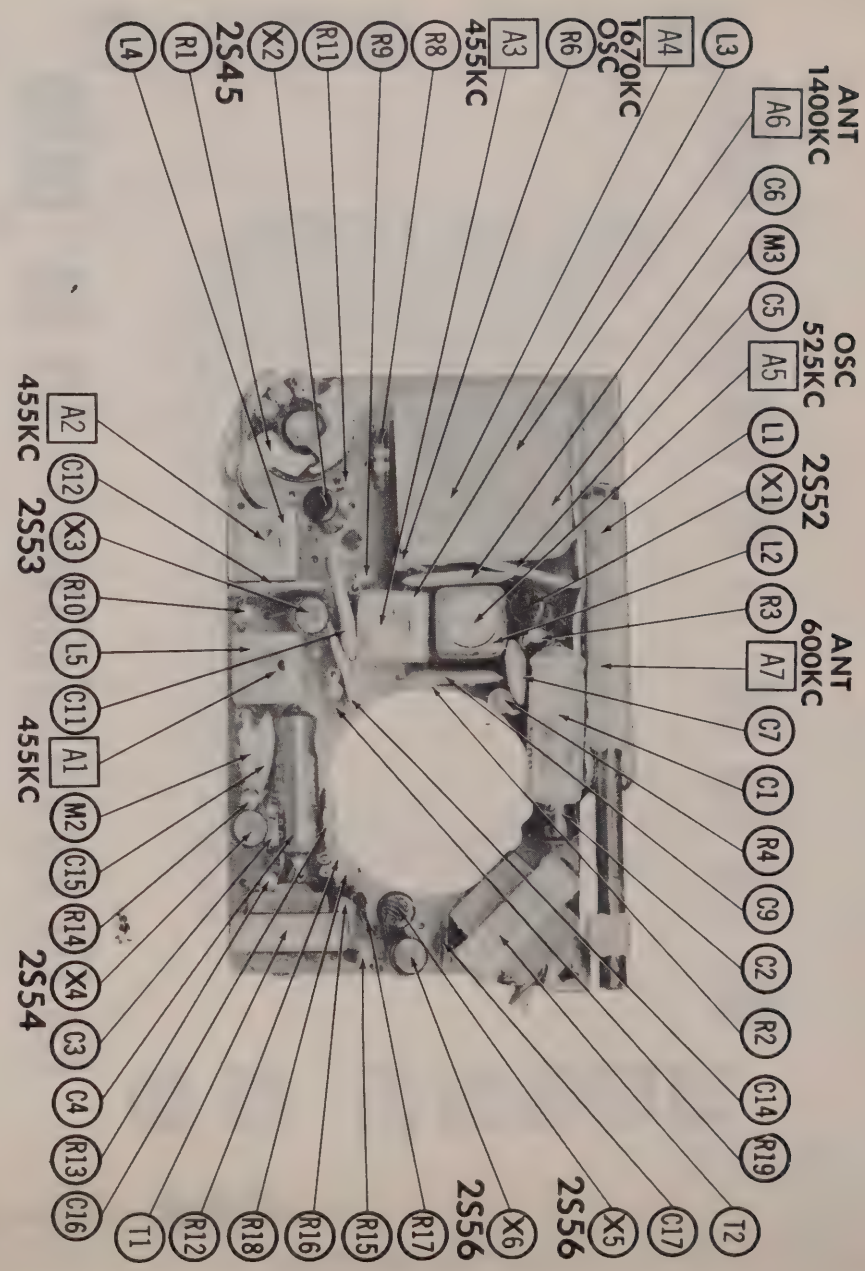
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Tuning Cap.	C-129	2 Gang

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	K-516EX	Tuning
Knob	K-506	Volume
Cabinet	1140-01A	
Rear Cover	1140-01B	

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE*

EIA MEMBER

V-M MODELS 801, 802, 901, 902

V-M MODELS 801, 802, 901, 902

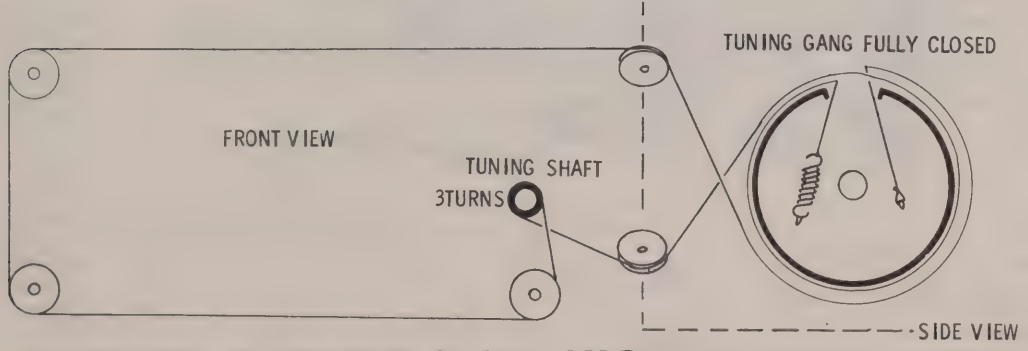
MODEL 902

V-M MODELS 801, 802, 901, 902

TRADE NAME	V-M Models 801, 802, 901, 902		
MANUFACTURER	V-M Corp., Benton Harbor, Michigan		
TYPE SET	AC Operated 17 Tube FM-AM Tuner-Amplifier with 4 Speed Automatic Stereo Record Changer		
POWER SUPPLY	110-120 Volts AC, 60 Cycles	RATING	140 Watts, 1.35 Amp. @ 117 Volts AC
TUNING RANGE	BROADCAST 550 - 1600KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE V-M 1201 - PHOTOFACT SET 436 FOLDER 18

DIAL CORD STRINGING



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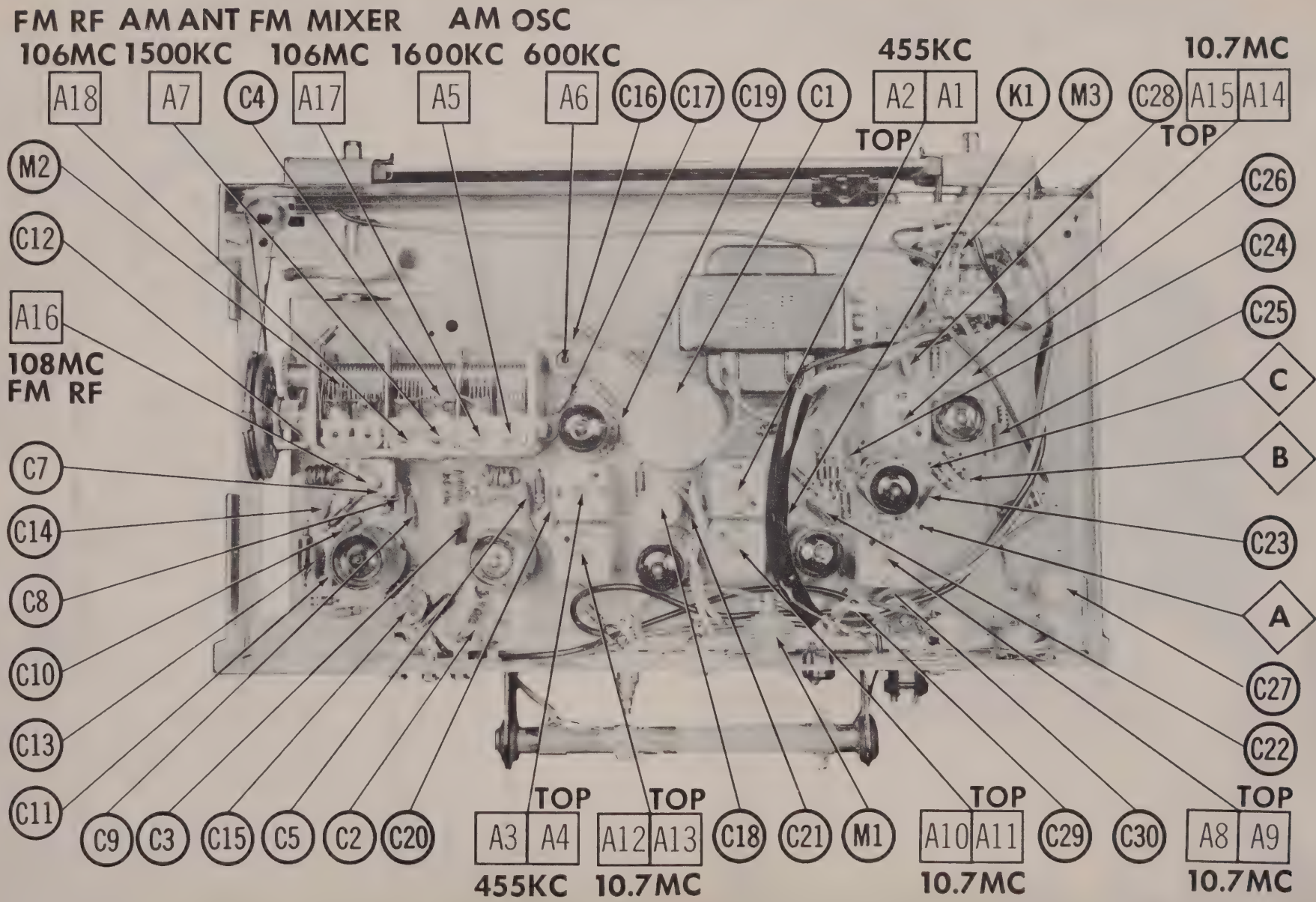


TUNER CHASSIS TOP VIEW - ALIGNMENT, CAPACITOR & MISC IDENT

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools:
A1 thru A4, A8 thru A15 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A7, A16 thru A18 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A6 ..... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	AM	Point of non-interference	AC probe to Audio Output Jack. Common to chassis.	A1, A2, A3, A4,	Adjust for maximum deflection.
2.	Loop	1600KC	"	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	"	Tune to 600KC signal	"	A6	"
4.	"	1500KC	"	Tune to 1500KC signal	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	"	"	"	DC probe thru 100K to point Ⓑ. Common to chassis.	A14	"
7.	"	"	"	"	DC probe thru 100K to point Ⓒ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	High side thru .01mfd to pin 7 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1.
6.	"	"	"	"	Vert. Amp. thru 100K to point Ⓑ. Low side to chassis.	A14	"
7.	"	"	"	"	Vert. Amp. thru 100K to point Ⓒ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	108MC (Unmod.)	FM	108MC	DC probe to point Ⓐ. Common to chassis.	A16	Adjust for maximum deflection.
9.	"	106MC	"	Tune to 106MC signal	"	A17, A18	"
	The following step is unnecessary unless receiver fails to track properly.						
10.	High side thru 270Ω to FM antenna terminal. Low side to chassis.	88MC	FM	88MC	DC probe to point Ⓐ. Common to chassis.	L6	Adjust for maximum deflection by compressing or expanding coil turns.

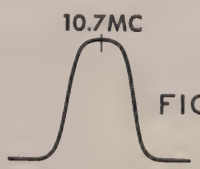


FIG. 1

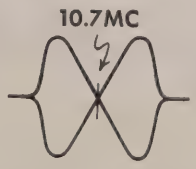
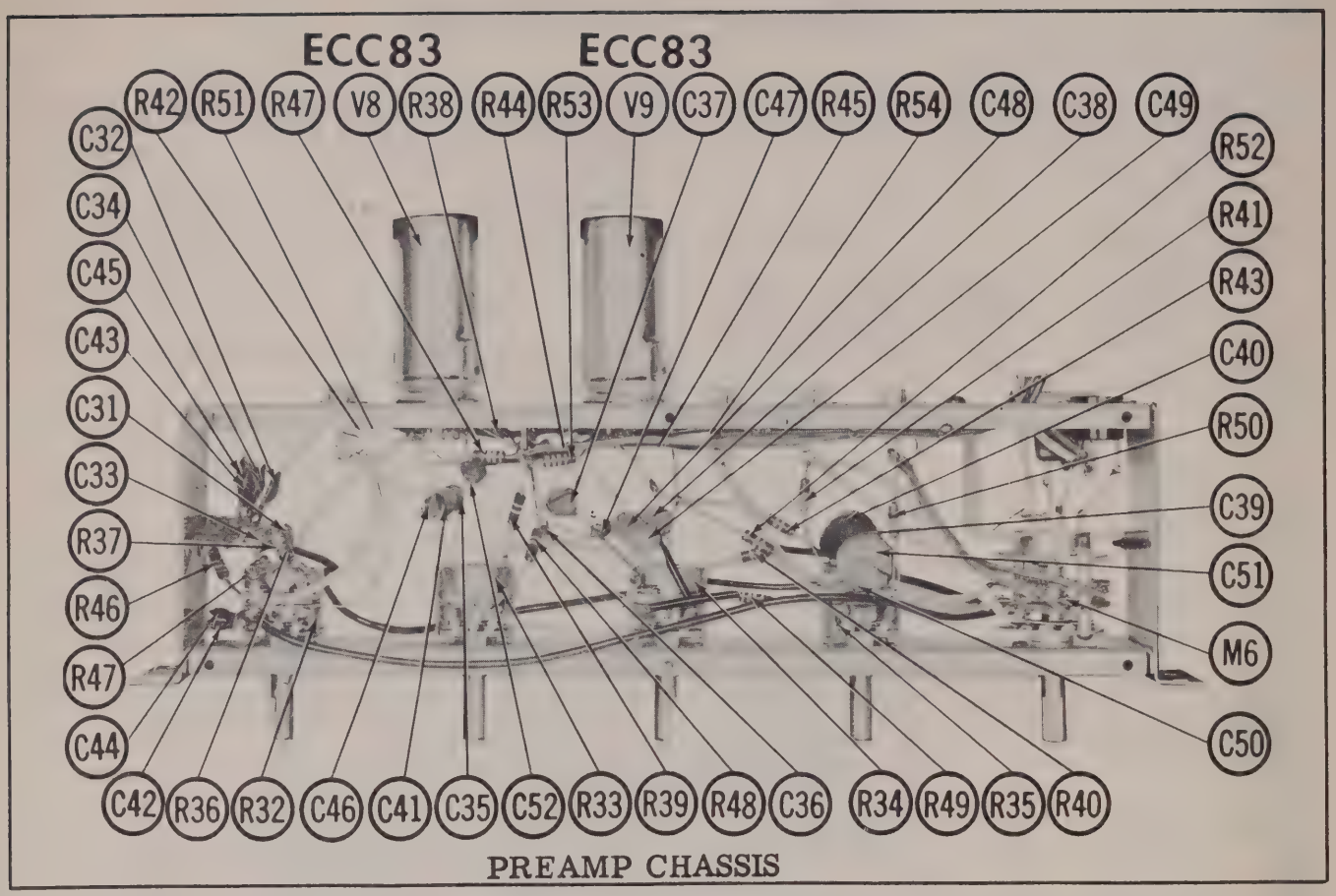
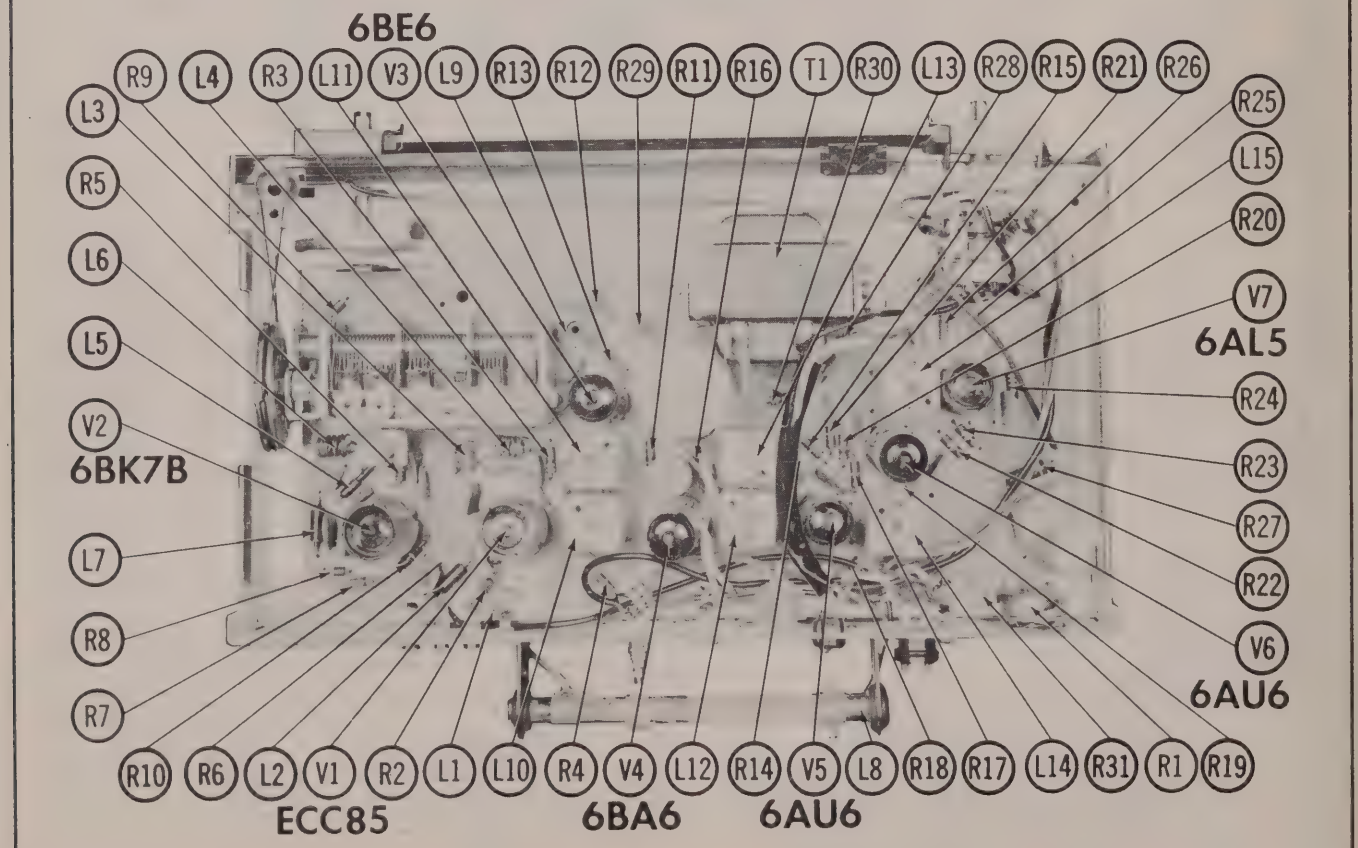


FIG. 2



PREAMP CHASSIS



TUNER CHASSIS - TUBE, INDUCTOR & RESISTOR IDENT

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

• CBS •	GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •

ITEM No.	USE	TYPE
V1	FM RF Amp. - FM Mixer	ECC85/6AQ8
V2	FM Osc. - AFC	6BK7B
V3	AM Converter	6BE6
V4	1st FM-AM IF Amplifier	6BA6
V5	2nd FM IF Amplifier - AM Detector - AVC	6AU6
V6	FM Limiter	6AU6
V7	Discriminator	6AL5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	150			D0290 ‡	PFP311.53		PCL-3443.5	
B	■60	150							
C	60	150							

‡ Use printed circuit adaptor #55277 and 55278.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C3	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-47	CN7-47	10TCU-Q47
C4	.68	#12095	NPO-SI .68	TCZ-R68				
C5	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C6	2.2		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C7	1-10	#12100		829-10				
C8	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C9	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C10	10 N5600	#12098				*		
C11	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C12	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C13	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C14	47 N5600	#12094				*		
C15	470		BPD-00047	DD-471	BYA10SI	CCD-471	GP347	10TS-T47
C16	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C17	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	.05 200V		P2151N-047	DD-503	BC2S47J	4DP-3-503	ACE615	2SE-S47
C19	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C23	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-47	CN7-447	10TCU-Q47
C24	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C25	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-100	CN7-310	10TCU-T10
C26	470 10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C27	.05 200V		P2151N-047	DD-503	BC2S47J	4DP-3-503	ACE615	2SE-S47
C28	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10
C30	10000		BPD-01	DD-103	BYA10SI	CCD-103	GP110	5HK-S10

V-M Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	RVCOM2380	AB-60	A47-500K-Z	B13-133	TA55A	Output Level
B	Shaft			AK-1	FKS-1/4	SK-2		

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	68Ω	
R3	3.3meg	
R4	15K	
R5	22K	
R6	1000Ω	(6800Ω) *
R7	100Ω	
R8	470K	
R9	47K	
R10	1000Ω	
R11	1meg	

ITEM No.	RATING	REMARKS
R12	3300Ω	
R13	22K	
R14	2.2meg	
R15	220K	
R16	1000Ω	
R17	1000Ω	
R18	1000Ω	
R19	100K	
R20	10K	
R21	15K	

ITEM No.	RATING	REMARKS
R22	100K	
R23	100K	
R24	33K	
R25	33K	
R26	1meg	
R27	4.7Ω 1W	
R28	330Ω	
R29	330Ω	
R30	33Ω	
R31	50Ω 5W	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	V-M PART No.	REPLACEMENT DATA
K1	AM Detector RF Filter	150mmf, 150mmf, 47K	PC781599	Aerovox PA-98 Centralab PC-51 Cornell-Dubilier 111TM2 Sprague D-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA V-M PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Antenna Coil	GC28831				4584		.24uh
L2	RF Choke	GC481454						3.3uh
L3	FM RF Coil	GL781543						
L4	FM Mixer Coil	GL781543						
L5	Cathode Choke	GC24602	19-1000	19-1000	BC-561	4602		1uh
L6	FM Osc. Coil	GL781544						
L7	RF Choke	GC481454						3.3uh
L8	Loopstick	GL2442839						
L9	AM Osc. Coil	GL1121988						
L10	1st FM IF	GT781993	16-3490	16-3490		1463-PC		
L11	1st AM IF	GT782122	16-6780	16-6780	BC-356	13-PC1	RF-4	
L12	2nd FM IF	GT781994	16-3490	16-3490		1463-PC		
L13	2nd AM IF	GT782123	16-6780	16-6780	BC-357	13-PC2	RF-4	
L14	3rd FM IF	GT781995	16-3490	16-3490		1463-PC		
L15	Discriminator	GT782124	17-3491	17-3491		1464-PC		

TRANSFORMER (POWER)

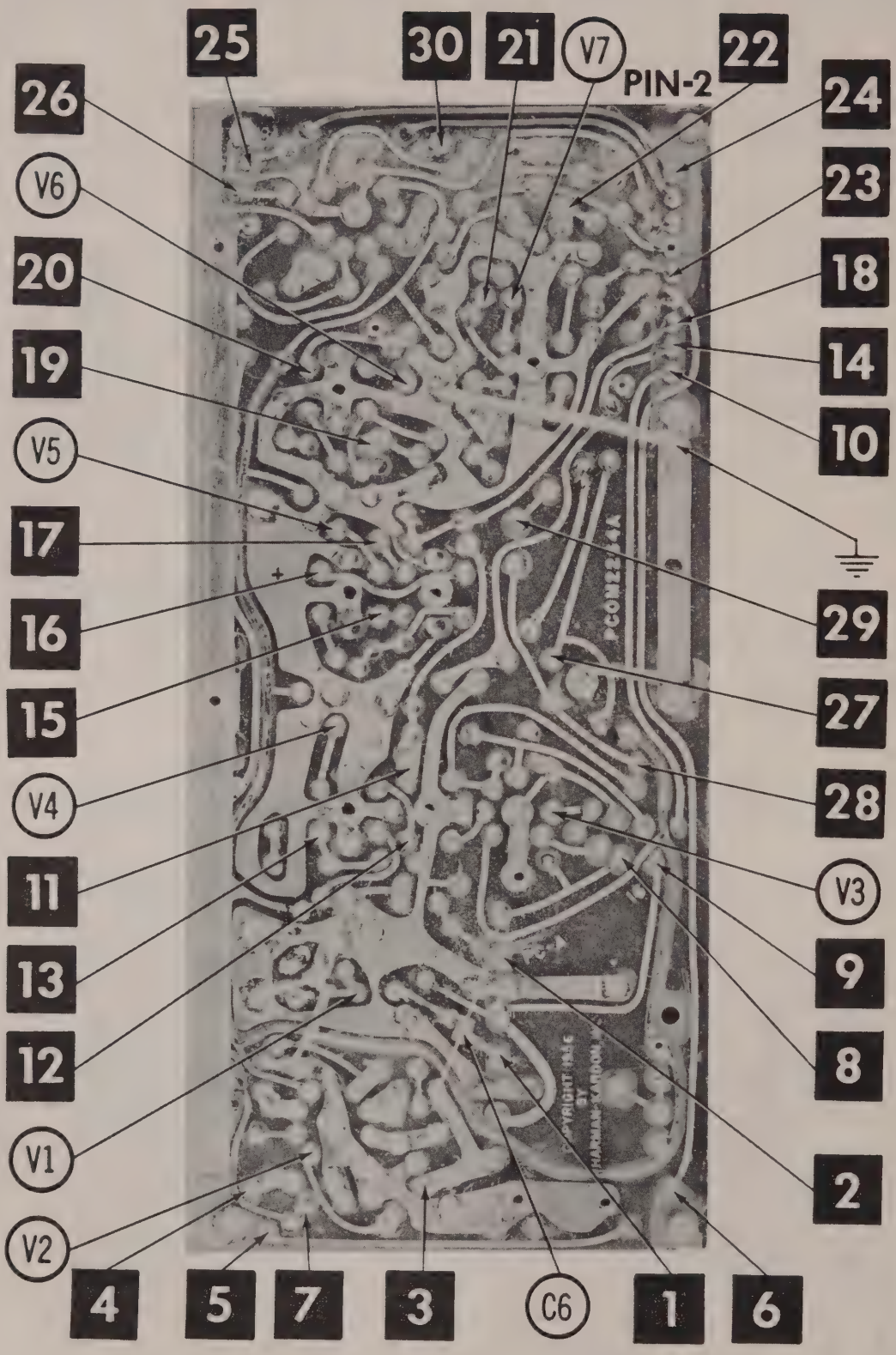
ITEM No.	RATING PRI.	RATING SEC. 1	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ② .3A	120V ② .035A Tap 6.3V ② 2.5A	FT781419						

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA V-M PART No.	INTERNATIONAL PART No.	ITT PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.034A	Z1362133 ①	RS065 ①	1234AH ①	65 ①	SR-200 ②	① Selenium Type ② Silicon Type

MISCELLANEOUS

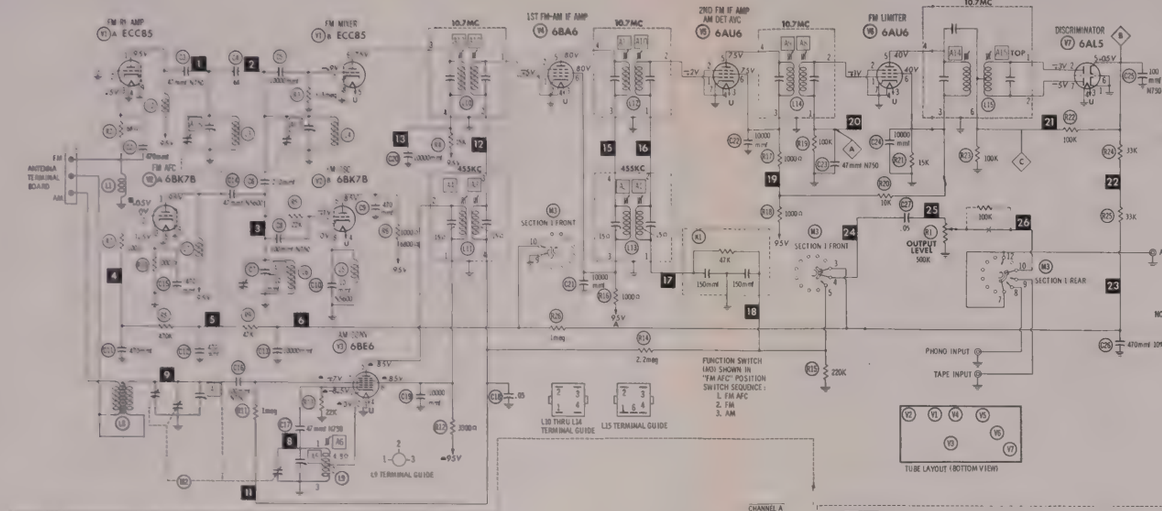
ITEM No.	PART NAME	V-M PART No.	NOTES
M2	Tuning Cap.	JV811553	3 Gang
M3	Switch	S-ER2302646	Function Selector

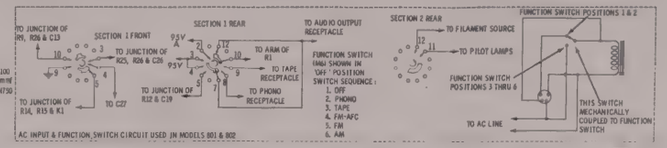


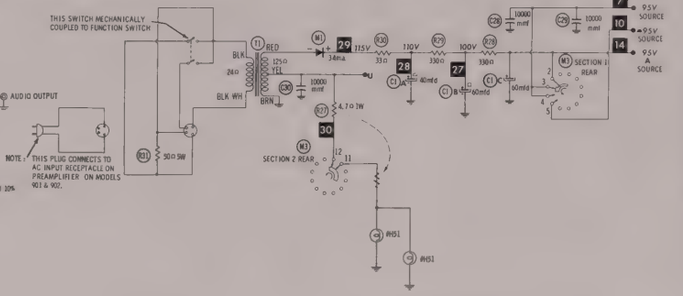
A Howard W. Sams CIRCUITRACE* Photo

TUNER PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED




AC INPUT & FUNCTION SWITCH CIRCUIT USED IN MODELS 801 & 802
TO JUNCTION OF R9, R26 & C13
TO JUNCTION OF R25, R26 & C26
TO JUNCTION OF R32 & C19
TO JUNCTION OF R34, R35 & R1
TO C27
TO ARM OF R1
TO TAPE RECEPTACLE
TO PHONO RECEPTACLE
TO AUDIO OUTPUT RECEPTACLE
FUNCTION SWITCH (#6) SHOWN IN "OFF" POSITION
SWITCH SEQUENCE:
1. OFF
2. PHONO
3. TAPE
4. FM-AFC
5. FM
6. AM
TO FILAMENT SOURCE
TO PILOT LAMPS
TO AC LINE
FUNCTION SWITCH POSITIONS 1 & 2
FUNCTION SWITCH POSITIONS 3 THRU 6
THIS SWITCH MECHANICALLY COUPLED TO FUNCTION SWITCH


THIS SWITCH MECHANICALLY COUPLED TO FUNCTION SWITCH
NOTE: THIS PLUG CONNECTS TO AC INPUT RECEPTACLE ON PREAMPLIFIER ON MODELS 901 & 902.
SECTION 1 REAR
SECTION 2 REAR
95V SOURCE
115V
110V
100V

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

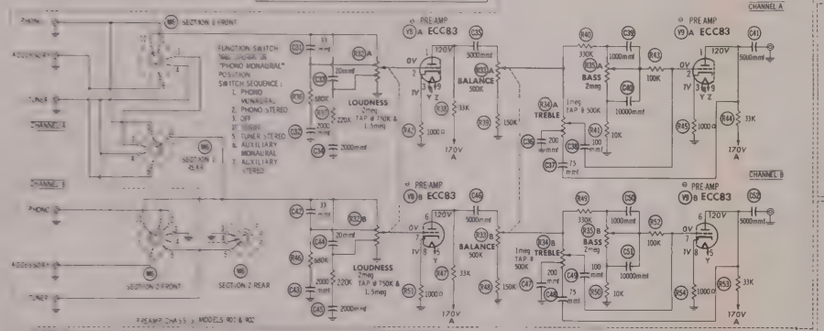
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	1660Ω	0Ω	68Ω	0Ω	1Ω	†15K	3.3meg	0Ω	0Ω
V2	6BK7B	†660Ω	1.8meg ≠520K	1000Ω	1Ω	0Ω	†1660Ω	22K	2Ω	0Ω
V3	6BE6	∞22K	∞ 9Ω	0Ω	1Ω	†∞390Ω	†∞390Ω	∞3.6meg		
V4	6BA6	2.4meg	0Ω	1Ω	0Ω	†1660Ω	†1660Ω	0Ω		
V5	6AU6	265K	0Ω	1Ω	0Ω	†2600Ω	†2600Ω	0Ω		
V6	6AU6	100K	0Ω	1Ω	0Ω	†800Ω	†800Ω	0Ω		
V7	6AL5	0Ω	100K	1Ω	0Ω	200K	0Ω	100K		
V8	ECC83 12AX7	††77K	0Ω	1000Ω	1Ω	1Ω	††77K	0Ω	1000Ω	1Ω
V9	ECC83 12AX7	††77K	110K	1000Ω	1Ω	1Ω	††77K	110K	1000Ω	1Ω
V10	ECC83 12AX7	††1meg	150K	560Ω	1Ω	1Ω	††150K	††1meg	100K	1Ω
V11	EL84 6BQ5	330K	330K	200Ω	1Ω	1Ω	NC	††255Ω	NC	††1000Ω
V12	EL84 6BQ5	330K	330K	200Ω	1Ω	1Ω	NC	††255Ω	TP	††1000Ω
V13	5Y3GT	NC	¶	TP	180Ω	NC	120Ω	TP	¶	
V14	ECC83 12AX7	•1meg	150K	560Ω	1Ω	1Ω	•150K	•1meg	100K	1Ω
V15	EL84 6BQ5	330K	330K	200Ω	1Ω	1Ω	NC	•255Ω	NC	•1000Ω
V16	EL84 6BQ5	330K	330K	200Ω	1Ω	1Ω	NC	•255Ω	TP	•1000Ω
V17	5Y3GT	NC	¶	TP	180Ω	NC	120Ω	TP	¶	

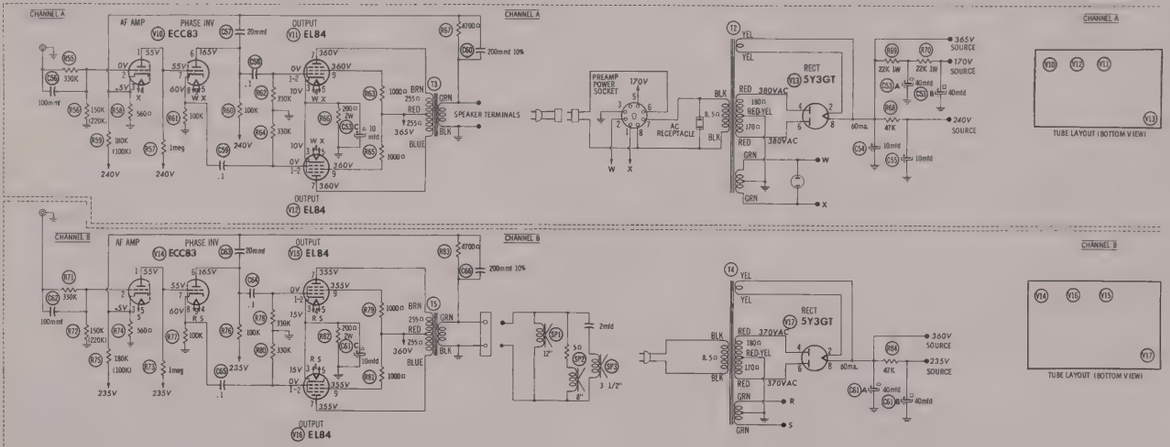
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
- MEASURED IN "AM" POSITION.
† MEASURED FROM OUTPUT OF M1.
■ MEASURED IN "FM-AFC" POSITION.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V13.
• MEASURED FROM PIN 8 OF V12.
NC NO CONNECTION
TP TIE POINT

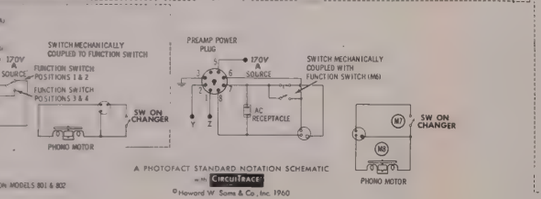
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM






PREAMP POWER PLUG
170V A SOURCE
SWITCH MECHANICALLY COUPLED WITH FUNCTION SWITCH (M6)
AC RECEPTACLE
SW ON CHANGER
PHONO MOTOR
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
©Howard W. Sams & Co., Inc. 1960

V-M MODELS 801, 802, 901, 902

PRE-AMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V8	Channel A Preamp. - Channel B Preamp.	ECC83/12AX7 (7025)*

ITEM No.	USE	TYPE
V9	Channel A Preamp. - Channel B Preamp.	ECC83/12AX7 (7025) *

* Alternate

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C31	33		BPD-000033	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C32	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C33	20		DI-20	DD-200	L10Q20	CCD-200	GP420	10TS-Q20
C34	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C35	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C36	200		BPD-0002	DD-201	L10T2	CCD-201	GP320	10TS-T20
C37	75		NPO-DI 75	DD-750	L10Q75	CCD-750	GP475	10TS-Q75
C38	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C39	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C40	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C41	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C42	33		BPD-000033	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C43	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C44	20		DI-20	DD-200	L10Q2	CCD-200	GP420	10TS-Q20
C45	2000		BPD-002	DD-202	BYA10D2	CCD-202	GP220	5HK-D20
C46	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C47	200		BPD-0002	DD-201	L10T2	CCD-201	GP320	10TS-T20
C48	75		NPO-DI 75	DD-750	L10Q75	CCD-750	GP475	10TS-Q75
C49	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C50	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C51	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C52	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R32A	2meg *	1/2	12378				■ UE4035	Loudness, Channel A
B	2meg *	1/2						Loudness, Channel B
R33A	500K	1/2	12379	B-59	AD47-500K-S	Q11-133		Balance, Channel A
B	500K	1/2		SR-59	Not Req.	M11-133	▲ UE1295	Balance, Channel B
C	Shaft			Not Req.	FS-3	Not Req.		
R34A	1meg †	1/2	12380	BT-71			♦	Treble, Channel A
B	1meg †	1/2		STR-71				Treble, Channel B
R35A	2meg	1/2	12381	B-76	AD47-2meg-Z	Q13-139		Bass, Channel A
B	2meg	1/2		SR-76	Not Req.	M13-139	▲ UE1874	Bass, Channel B
C	Shaft			Not Req.	FS-3	Not Req.		

* Taps ⓐ 750K and 1.5meg. † Tap ⓐ 500K.
■ "STA-LOC" equivalent: FA26DT155, RU26DT155, CS3500.
▲ "STA-LOC" equivalent: FB55L, RU55L, CS3500.
♦ "STA-LOC" equivalent: FB16T55, RU16T55, CS3500.
▲ "STA-LOC" equivalent: FA26A, RU26A, CS3500.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R36	680K	
R37	220K	
R38	33K	
R39	150K	
R40	330K	
R41	10K	
R42	1000Ω	

ITEM No.	RATING	REMARKS
R43	100K	
R44	33K	
R45	1000Ω	
R46	680K	
R47	33K	
R48	150K	
R49	330K	

ITEM No.	RATING	REMARKS
R50	10K	
R51	1000Ω	
R52	100K	
R53	33K	
R54	1000Ω	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA								
	V-M PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M4	16708-B	13TB	Not Req.	13	Not Req.			8TA4-S	N-8TA-S

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS	
	V-M PART No.	CLEVITE WALCO PART No.	JENSEN PART No.		
M5	18626-B	W-107STSS † or W-107STDS †♦	S-69 † or S-69XSD † ♦ or S-69XDD ♦	† Jewel	♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	V-M PART No.	NOTES
M6	Switch	12382	Function Selector, Model 901, 902
	Switch	12384	Function Selector, Model 801, 802
M7	Switch	467	Part of Changer
M8	Motor	18361	Assembly, Complete
	Motor	9134	(Motor Only)

CHANNEL A AMP PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V10	Channel A AF Amp. - Phase Inverter	ECC83/12AX7
V11	Channel A Output	EL84/6BQ5
V12	Channel A Output	EL84/6BQ5
V13	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C53A	▲40	450	12112	AFH3-133	C1070	FP376.8	TMT-133	TVLS-3486 *	
B	■40	450							
C	▲10	25							
C54	10	400	12106	PRS1720	BR1045	TC72	TD-10-450	TVA-1705	
C55	10	400	12106	PRS1720	BR1045	TC72	TD-10-450	TVA-1705	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C56	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C57	20		DI-20	DD-200	L10Q20	CCD-200	GP420	10TS-Q20
C58	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C59	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C60	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R55	330K	
R56	150K	(220K) *
R57	1meg	
R58	560Ω	
R59	180K	(100K) *
R60	100K	
R61	100K	
R62	330K	
R63	1000Ω	
R64	330K	
R65	1000Ω	
R66	200Ω 2W	
R67	4700Ω	
R68	47K	
R69	22K 1W	
R70	22K 1W	

* Alternate Value.

TRANSFORMER (POWER)

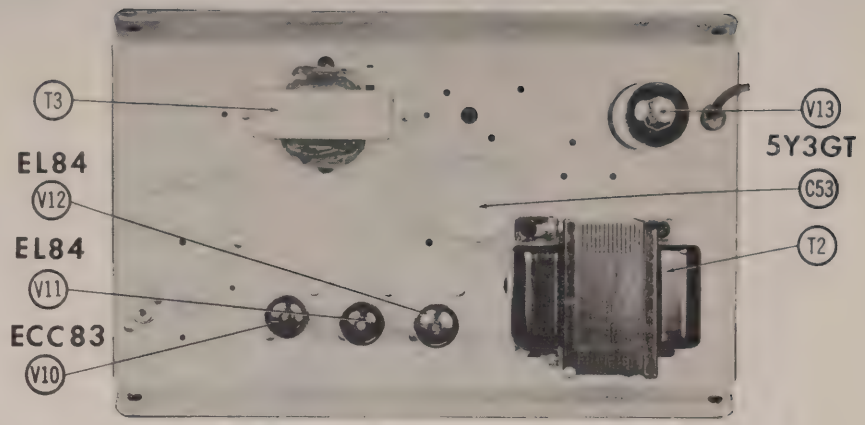
ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T2	117V @ .6A	740VCT @ .072A	5V @ 2A	12580	24R02U ①			PC8408 ①	24R02U ①	R-11A ①
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT @ 2.4A									

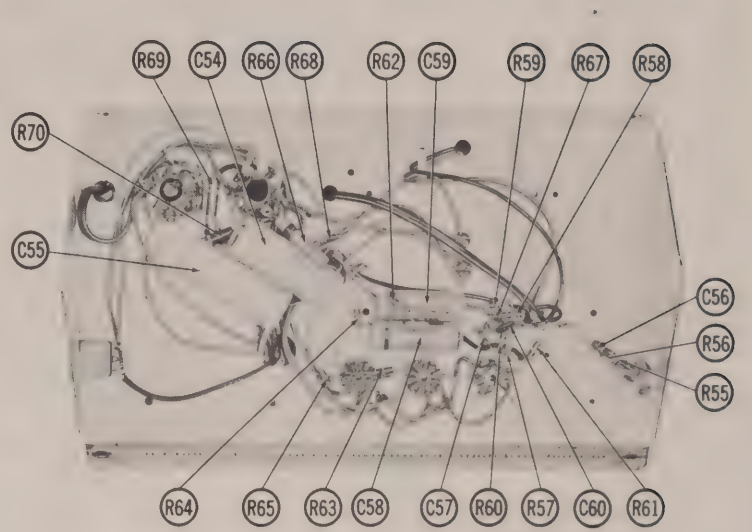
① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	4500Ω CT	1-2Ω	12581	22S62	A-2905	AU-609	A-3870	22S62	S-55X	

CHANNEL A CHASSIS





WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHANNEL B AMP PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V14	Channel B AF Amp. - Phase Inverter	ECC83/12AX7	V16	Channel B Output	EL84/6BQ5
V15	Channel B Output	EL84/6BQ5	V17	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C61A	▲40	450	12112	AFH3-133	C1070	FP376.8	TMT-133	TVLS-3486 *	
B	■40	450							
C	▲10	25							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C62	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C63	20		DI-20	DD-200	L10Q2	CCD-200	GP420	10TS-Q20
C64	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C65	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C66	200 10%		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R71	330K	
R72	150K	(220K) *
R73	1meg	
R74	560Ω	
R75	180K	(100K) *

ITEM No.	RATING	REMARKS
R76	100K	
R77	100K	
R78	330K	
R79	1000Ω	
R80	330K	

ITEM No.	RATING	REMARKS
R81	1000Ω	
R82	200Ω 2W	
R83	4700Ω	
R84	47K	

* Alternate Value.

TRANSFORMER (POWER)

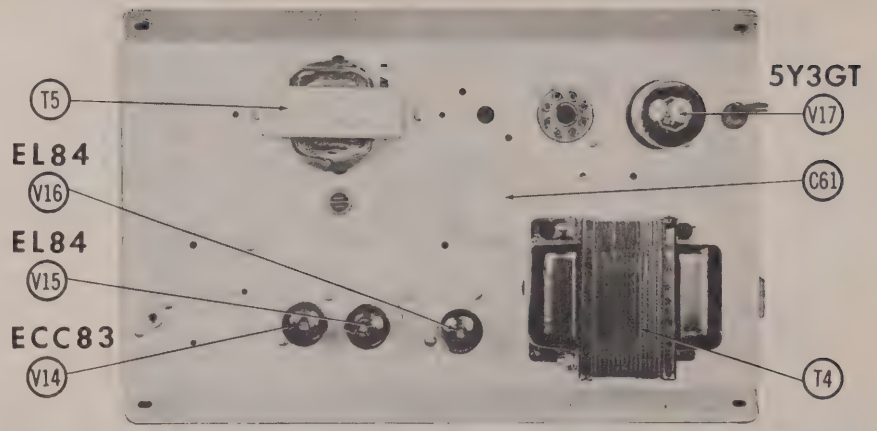
ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T4	117V @ .4A	740VCT @ .060A	5V @ 2A	12580	24R02U①			PC8408①	24R02U①	R-11A ①
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT @ 1.7A									

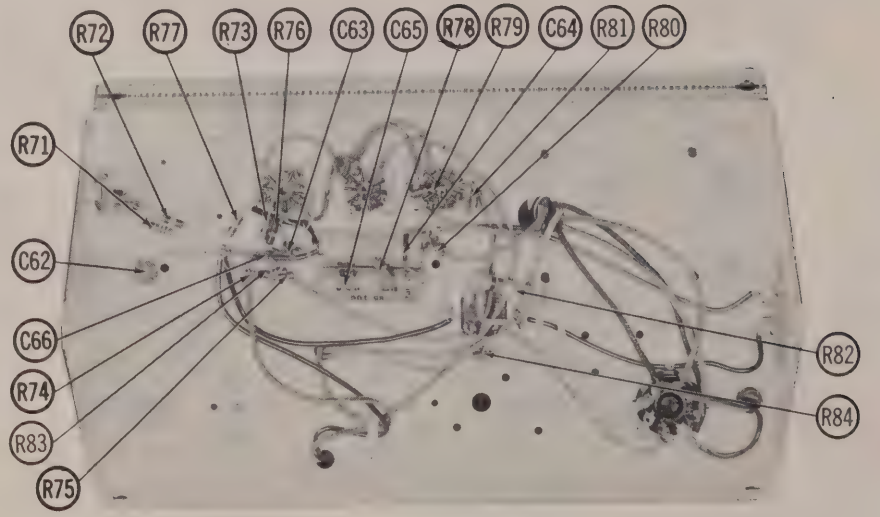
① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	4500Ω CT	1-2Ω	12581	22S62	A-2905	AU-609	A-3870	22S62	S-55X	

CHANNEL B CHASSIS





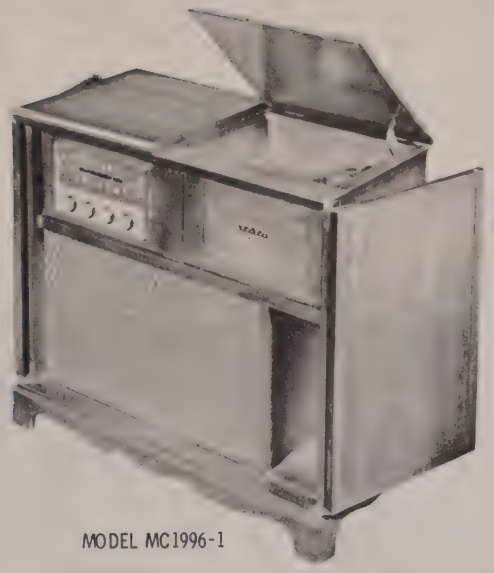
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA V-M PART No.	QUAM PART No.	NOTES
SP1	12"	PM	3-4Ω	18560	12A6A	
SP2	8"	PM	3-4Ω	18559	8A31	
SP3	3½"	PM	8-10Ω	18558	3A15TZ9.8	

PHOTOFACT* Folder with CIRCUITRACE*

WEBCOR MODELS 1959-1, 1965-1, 1968-1, 1969-1, 1992-1, 1996-1, 1997-1, 1998-1, 1999-1 (Ch. 14X285-1, -2, 286-1, 288-1, 290-1, 297-1, 298-1, 299-1, 73X015-1, 016-1)

WEBCOR MODELS 1959-1, 1965-1, 1968-1, 1969-1, 1992-1, 1996-1, 1997-1, 1998-1, 1999-1 (Ch. 14X285-1, -2, 286-1, 288-1, 290-1, 297-1, 298-1, 299-1, 73X015-1, 016-1)



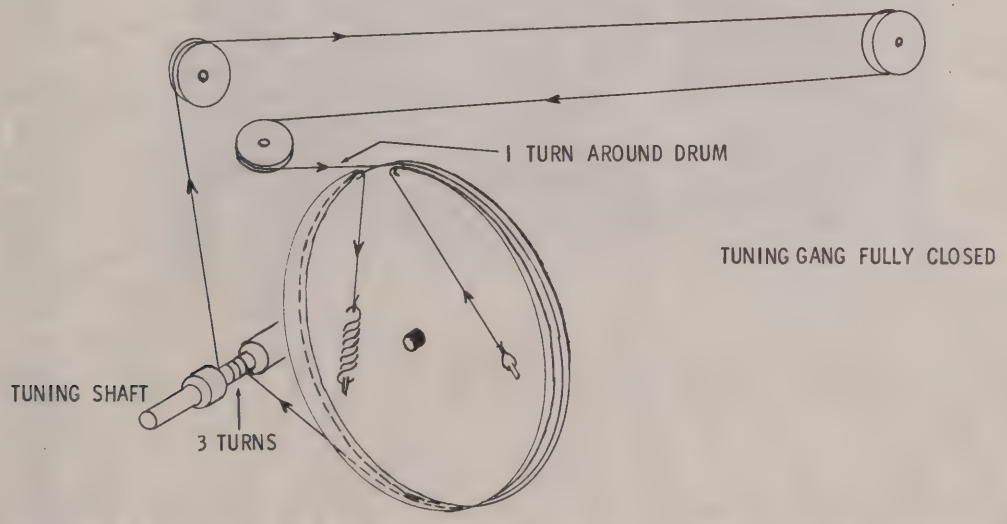
MODEL MC1996-1

WEBCOR MODELS 1959-1, 1965-1, 1968-1, 1969-1, 1992-1, 1996-1, 1997-1, 1998-1, 1999-1 (Ch. 14X285-1, -2, 286-1, 288-1, 290-1, 297-1, 298-1, 299-1, 73X015-1, 016-1)

TRADE NAME	Webcor Models BC-1959-1, EC-1959-1, MC-1959-1, WC-1959-1 (Preamp. 14X285-1, Amp. 14X288-1), BC-1965-1, CC-1965-1, MC-1965-1 (Preamp. 14X298-1, Amp. 14X297-1), BC-1968-1, WC-1968-1, MC-1969-1, PC-1969-1 (Preamp. 14X285-1, Amp. 14X286-1), BC-1992-1, WC-1992-1 (Preamp. 14X285-2, Amp. 14X299-1, Tuner 73X016-1) EC-1996-1, MC-1996-1, PC-1997-1, WC-1997-1, BC-1998-1, EC-1998-1, MC-1998-1, WC-1998-1 (Preamp. 14X285-2, Amp. 14X290-1, Tuner 73X015-1), MC-1999-1, PC-1999-1 (Preamp. 14X285-2, Amp. 14X299-1, Tuner 73X016-1)
MANUFACTURER	Webcor, Inc., 5610 W. Bloomingdale Ave., Chicago 39, Illinois
TYPE SET	AC Operated 7 Tube FM-AM Tuner, 6 Tube Preamp. - Amplifier With 4 Speed Automatic Record Changer (1959, 1965, 1968, 1969 Series Do Not Have Tuner)
POWER SUPPLY	105-120 Volts AC, 60 Cycles — RATING 100 Watts, .99 Amp. @ 117 Volts AC (Less Phono)
TUNING RANGE	BROADCAST 535 - 1620KC — FREQ. MOD. 88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER - SEE WEBCOR 172 - PHOTOFACT SET 147 FOLDER 13

DIAL CORD STRINGING

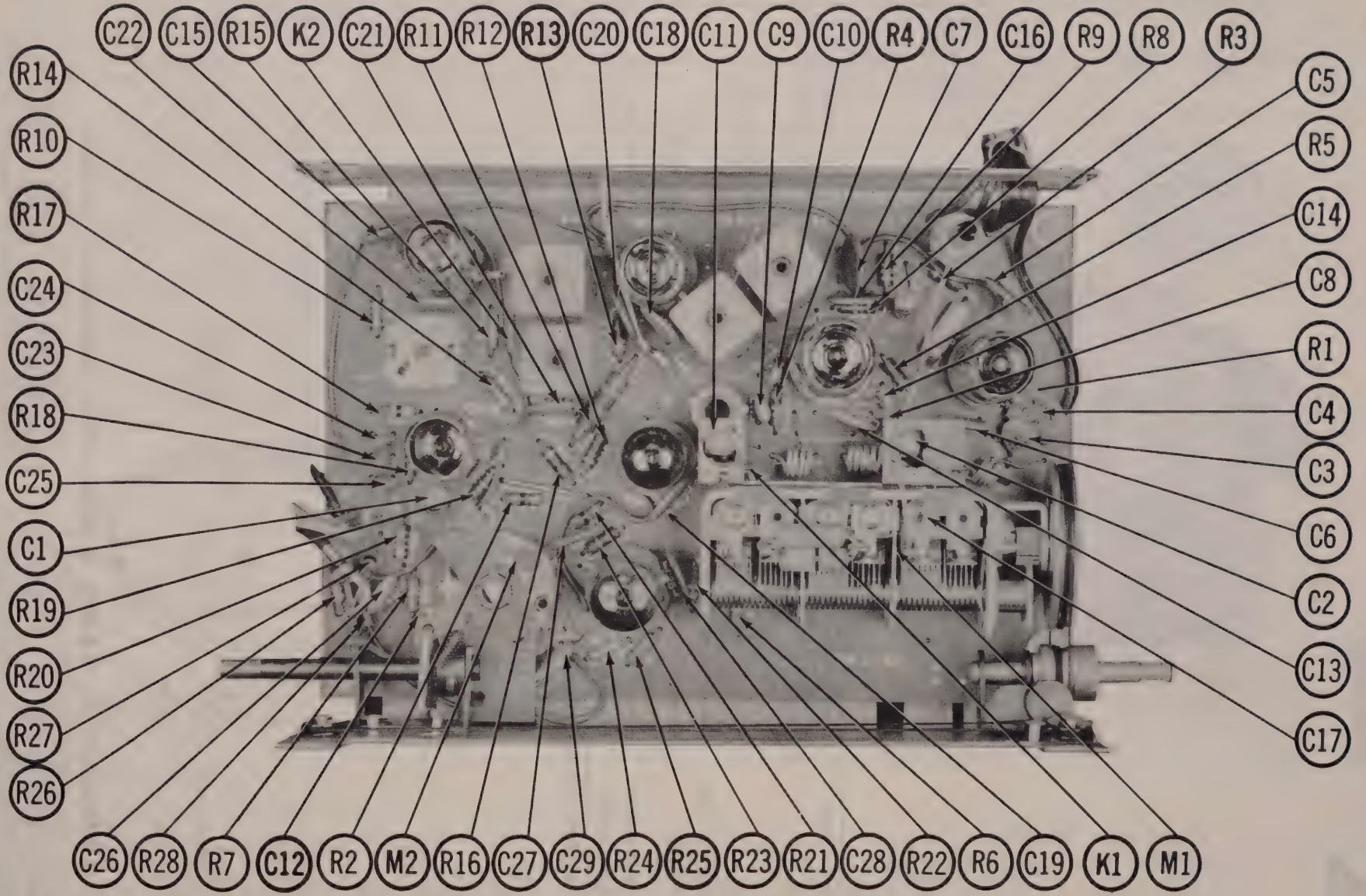


HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JN340

SET 475 FOLDER 17



TUNER CHASSIS TOP VIEW - CAPACITOR, RESISTOR & MISC. IDENT.

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BC5	V5	2nd FM IF Amp. - AM Det. - AVC	6AU6
V2	FM Converter - AFC	12AT7	V6	Ratio Detector	6AL5
V3	AM Converter	6BE6	V7	AF Amp. - Cath. Follower	12AU7
V4	1st FM-AM IF Amplifier	6BA6			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	8	25	30P314	BCD25008	NLW8-100	PET1760	ML8-25	TE-1203.5	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	1.5-9	#30P326		829-10				
C3	1000 10%		DI-1000 10%	DD-102		CCS-102	JL-210	10TS-D10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C9	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C10	33 N330 10%	#30P338		TCA-33				
C11	1.5-9	#30P337		829-10				
C12	50000		BPD-05	DD-503		6DP-3-503	BT-150	5HK-S50
C13	50000		BPD-05	DD-503		6DP-3-503	BT-150	5HK-S50
C14	10 N750 10%		N750-DI 10	DTN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	10 N150 10%							
C18	50000		BPD-05	DD-503		6DP-3-503	BT-150	5HK-S50
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C20	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	330 10%		DI-330 10%	DD-331	L10T33	CCD-331	JL-333	10TS-T33
C24	330 10%		DI-330 10%	DD-331	L10T33	CCD-331	JL-333	10TS-T33
C25	330 10%		DI-330 10%	DD-331	L10T33	CCD-331	JL-333	10TS-T33
C26	1000 10%		DI-1000 10%	DD-102		CCS-102	JL-210	
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	50000		BPD-05	DD-503		6DP-3-503	BT-150	5HK-S50

Webcor Part Number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R1	100K	
R2	1meg	
R3	1000Ω	
R4	10K	
R5	220Ω	
R6	220K	
R7	220K	
R8	560Ω	
R9	27K	
R10	470Ω	

ITEM No.	RATING	REMARKS
R11	6800Ω 1W	
R12	2.2meg	
R13	10K	
R14	470Ω	
R15	470K	
R16	1meg	
R17	68Ω	
R18	6800Ω	
R19	6800Ω	
R20	68K	

ITEM No.	RATING	REMARKS
R21	1meg	
R22	5000Ω	
R23	5600Ω	
R24	470K	
R25	2200Ω	
R26	22K	
R27	100K	
R28	22K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		WEBCOR PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil	11X1977						
L2	RF Choke	66P025						3.3uh ①
L3	FM RF Coil	66P027						
L4	RF Choke	66P023	19-2006	19-2006	BC-560	4590		.68uh ①
L5	RF Choke	66P024	19-1000	19-1000	BC-561	4602		luh ①
L6	FM Osc. Coil	11X1969						
L7	RF Choke	66P024	19-1000	19-1000	BC-561	4602		luh ①
L8	AM Ant. Trans	65P148						
L9	AM Osc. Coil	65P149						②
L10	1st FM IF	69P018	16-3490	16-3490		1463-PC		
L11	1st AM IF	69P020	16-6780	16-6780	BC-356	13-PC1	RF-4	
L12	2nd FM IF	69P019	16-3490	16-3490		1463-PC		
L13	2nd AM IF	69P021	16-6780	16-6780	BC-356	13-PC1	RF-4	
L14	Ratio Detector	69P017	17-3492	17-3492		1465-PC		

① IRC Part #CLA.

② Some versions may use Part #65P137 in this application.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	WEBCOR PART No.	REPLACEMENT DATA	
K1	AM Converter Grid	33mmf, 68Ω, 33K	62P023		
K2	AM Det. - Filter	100mmf, 100mmf, 47K	62P018		
				Aerovox	PA-98
				Centralab	PC-51
				Cornell-Dubilier	111TM-2
				Sprague	D-2

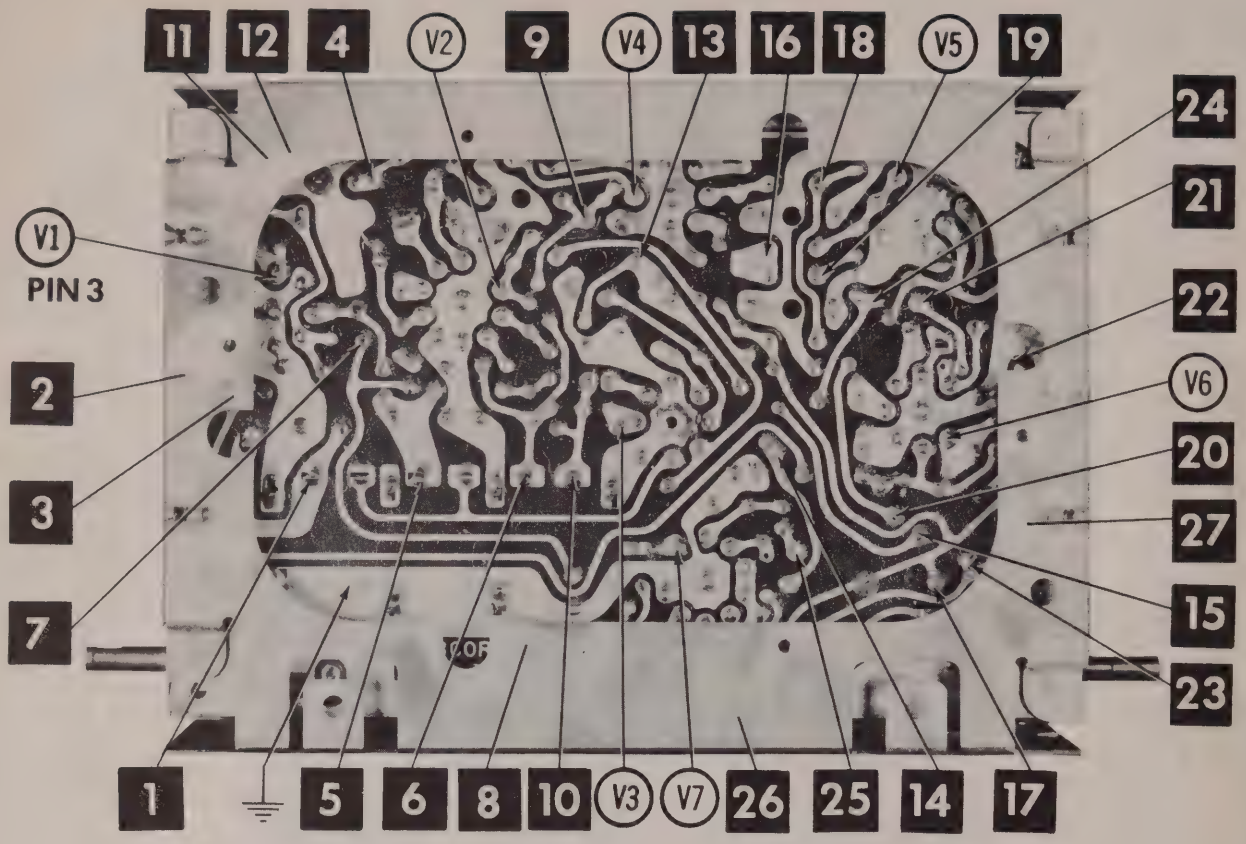
MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M1	Tuning Cap.	11X2064	3 Gang
M2	Switch	32P123	FM-FM AFC-AM
	Printed Board	62P013	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

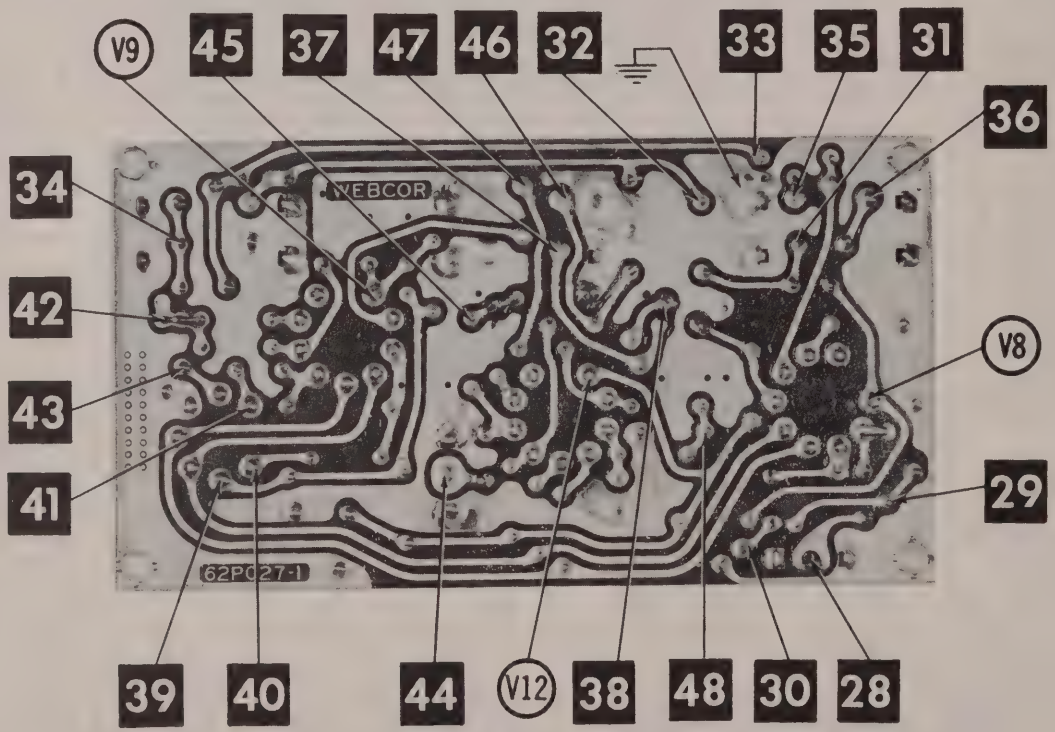
WEBCOR MODELS 1959-1, 1965-1, 1968-1, 1969-1, 1992-1, 1996-1, 1997-1, 1998-1, 1999-1 (Ch. 14X285-1, -2, 286-1, 288-1, 290-1, 297-1, 298-1, 299-1, 73X015-1, 016-1)



A Howard W. Sams CIRCUITRACE* Photo

TUNER PRINTED BOARD

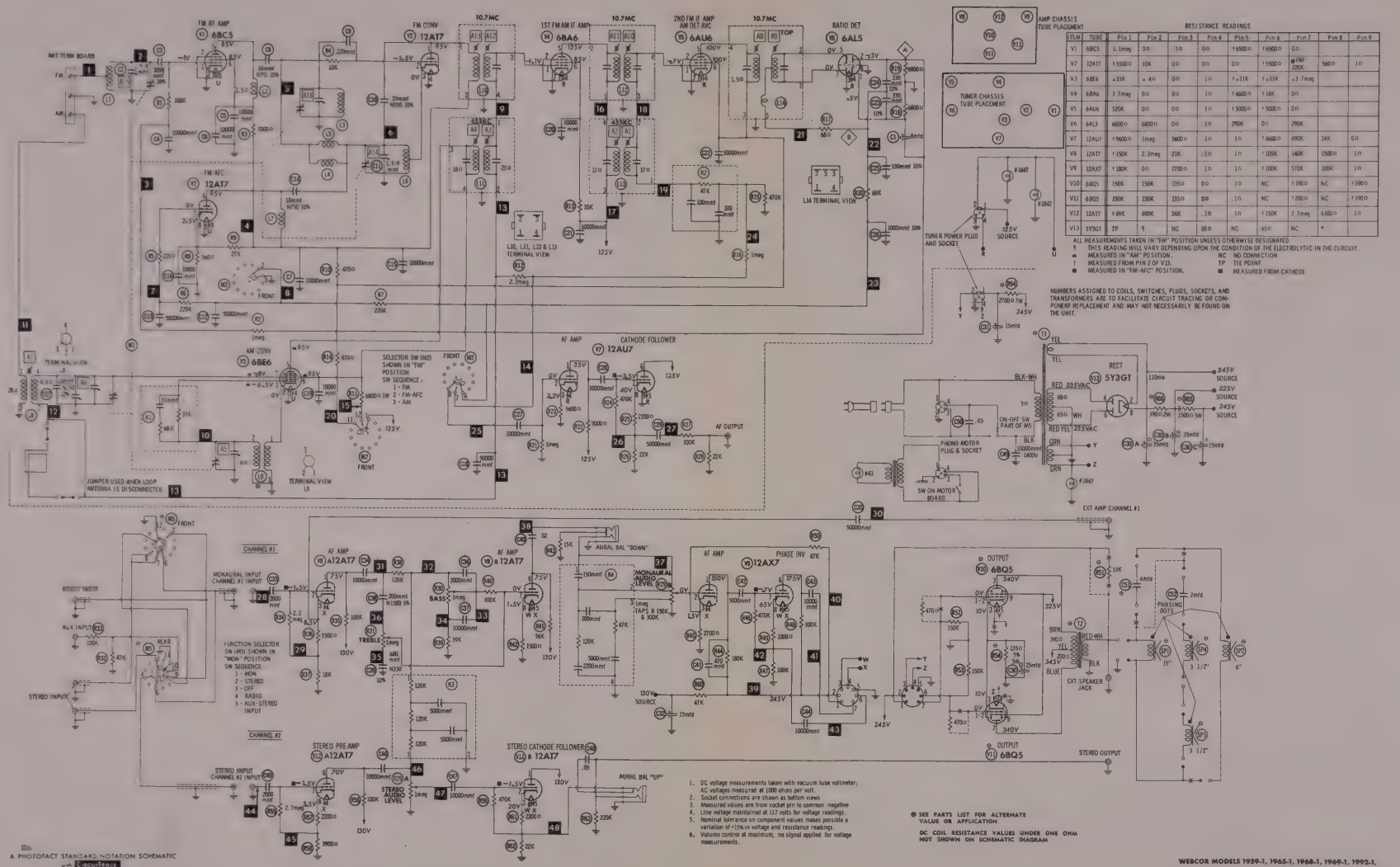
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A Howard W. Sams CIRCUITRACE* Photo

AMP PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BC5	1.1meg	0Ω	1Ω	0Ω	¶6500Ω	¶6500Ω	0Ω (INT 220K)		
V2	12AT7	¶5500Ω	10K	0Ω	0Ω	0Ω	¶5500Ω	560Ω	1Ω	
V3	6BE6	▲33K	▲ 4Ω	0Ω	1Ω	¶▲11K	¶▲11K	▲3.7meg		
V4	6BA6	3.7meg	0Ω	0Ω	1Ω	¶4600Ω	¶14K	0Ω		
V5	6AU6	520K	0Ω	0Ω	1Ω	¶5000Ω	¶5000Ω	0Ω		
V6	6AL5	6800Ω	6800Ω	0Ω	1Ω	290K	0Ω	290K		
V7	12AU7	¶9600Ω	1meg	5600Ω	1Ω	1Ω	¶4600Ω	490K	24K	0Ω
V8	12AT7	¶150K	2.2meg	21K	.1Ω	1Ω	¶105K	140K	1500Ω	1Ω
V9	12AX7	¶180K	0Ω	2700Ω	1Ω	1Ω	¶100K	510K	100K	1Ω
V10	6BQ5	150K	150K	135Ω	0Ω	1Ω	NC	¶190Ω	NC	¶390Ω
V11	6BQ5	150K	150K	135Ω	0Ω	.1Ω	NC	¶200Ω	NC	¶390Ω
V12	12AT7	¶49K	490K	36K	.1Ω	1Ω	¶150K	¶ 2.7meg	6100Ω	1Ω
V13	5Y3GT	TP	¶	NC	68Ω	NC	65Ω	NC	¶	

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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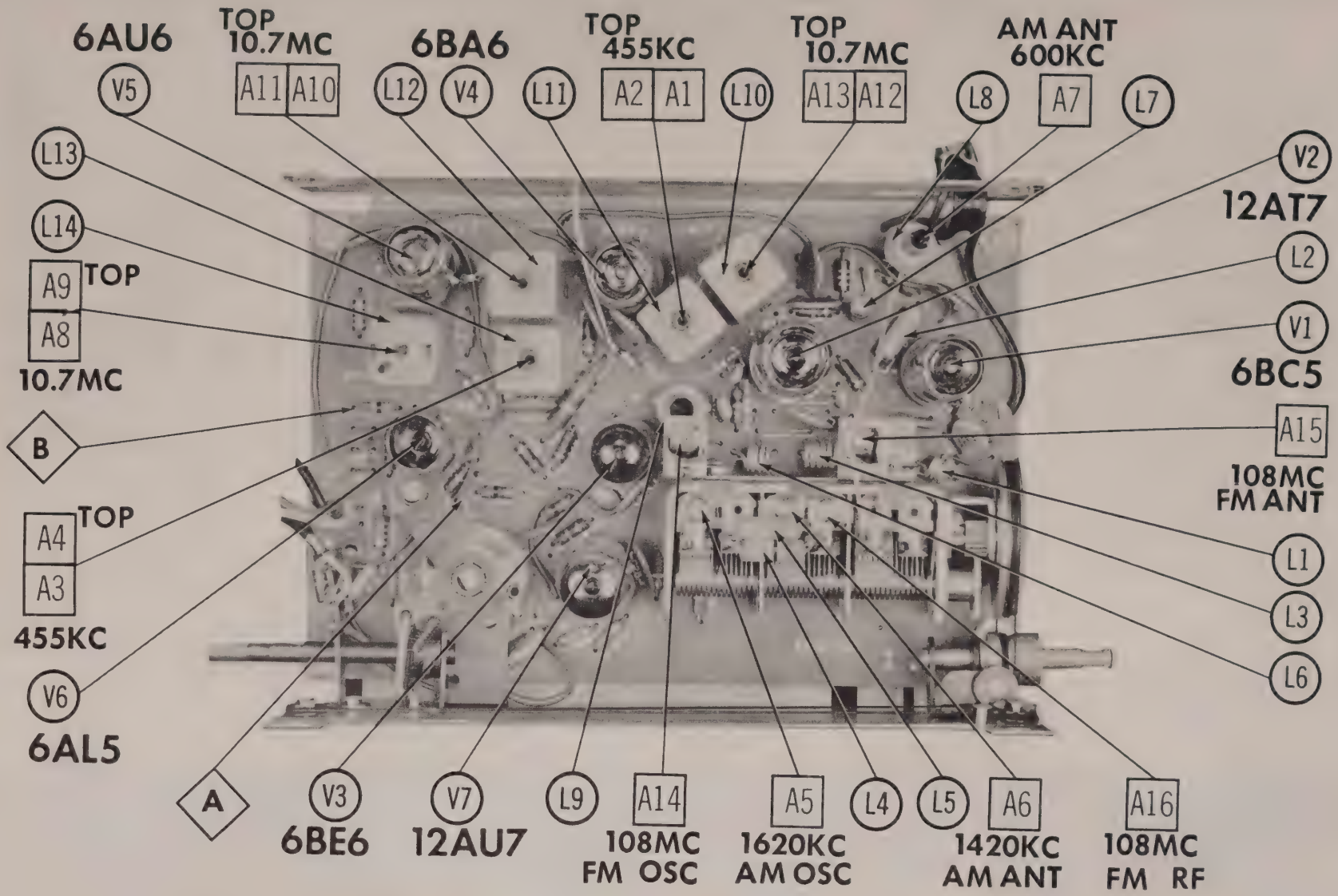
WEBCOR MODELS 1939-1, 1965-1, 1968-1, 1969-1, 1992-1, 1996-1, 1997-1, 1998-1, 1999-1 (Ch. 14X285-1, -2, 286-1, 288-1, 290-1, 297-1, 298-1, 299-1, 73X015-1, 016-1)



TUNER CHASSIS TOP VIEW - ALIGNMENT, INDUCTOR & TUBE IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, thru A4, A7, A10 thru A13 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6, A14, A15, A16 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A8, A9 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	AM	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1420KC	"	Tune to 1420KC signal	"	A6	"
4.		"	600KC	"	Tune to 600KC signal	"	A7	Adjust for maximum output. Repeat steps 3 and 4.
	Check Calibration at 600KC and 1000KC and repeat steps 2, 3 and 4 if necessary.							

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	200mmf	High side to pin 1 (grid) of 2nd FM IF Amplifier. Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference	DC probe to point (A). Common to chassis.	A8	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point (B). Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
7.	"	High side to FM RF stator lug of tuning gang. Low side to chassis.	"	"	"	DC probe to point (A). Common to chassis.	A10, A11, A12, A13	Adjust for maximum deflection.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	200mmf	High side to pin 1 (grid) of 2nd FM IF Amplifier. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A8	Disconnect Stabilizing Capacitor C1. Adjust for maximum gain and symmetry of response similar to Fig. 1.
6.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A9	Reconnect C1. Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.
7.	"	High side to FM RF stator lug of tuning gang. Low side to chassis.	"	"	"	Vert. Amp. to point (A). Low side to chassis.	A10, A11, A12, A13	Disconnect C1. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C1.

FM RF ALIGNMENT

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	240Ω Carbon Resistor	Across FM antenna terminals with 240Ω in high side.	108MC (Unmod.)	FM	108MC	DC probe to point (A). Common to chassis.	A14, A15, A16	Adjust for maximum deflection.
9.	"	"	88MC	"	88MC	"	L6, L3, L1	Adjust for maximum deflection. Repeat steps 8 and 9.

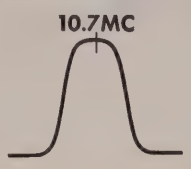
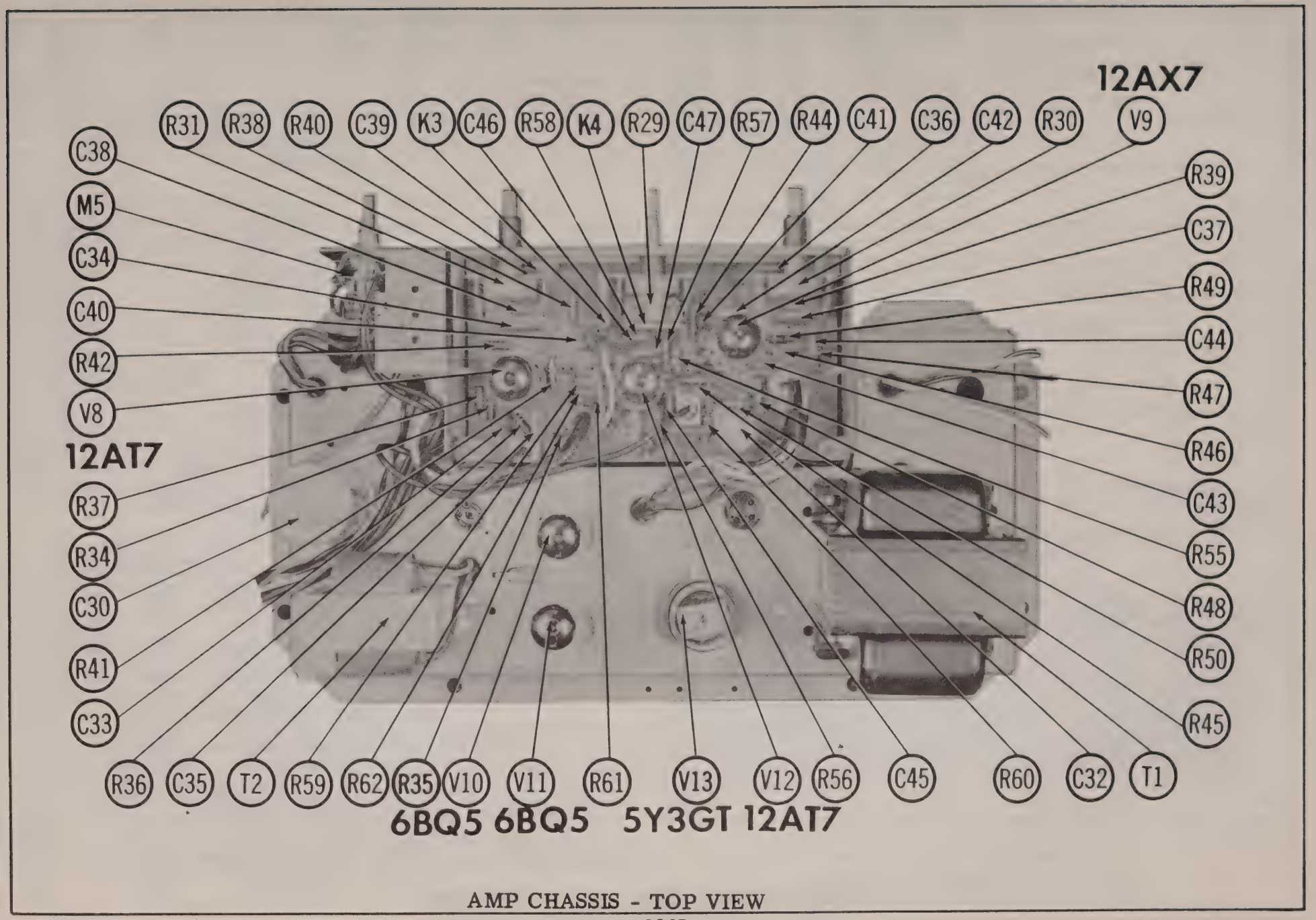


FIG. 1

FIG. 2



AMP CHASSIS - TOP VIEW

1959-1

WEBCOR MODEL

FOLDER 17

PAGE 9

AMP PARTS LIST AND DESCRIPTIONS

TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V8	AF Amplifier	12AT7
V9	AF Amp. - Phase Inverter	12AX7
V10	Output	6BQ5 Note 1
V11	Output	6BQ5 Note 1
V12	Stereo Preamp. - Stereo Cathode Follower	12AT7
V13	Rectifier	5Y3GT

Note 1. Chassis 14X286-1, 14X297-1, 14X299-1 use 12AB5 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA WEBCOR PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C30A	■35	375	30P306 ①	AFH4-79	D0150	FP421.4	TMQ-16	TVL-4771	Note 1
B	▲35	375			BBR25-25		TD-25-25	TVA-1205	
C	▲15	350							
D	25	25							
C31	15	450	30P334	PRS1730	BR1645	TC74	TD-16-450	TVA-1708	Note 2
C32	15	300	30P281	PRS1640	BR1635	TC64	TD-16-350	TVA-1607	

Note 1. Ch. 14X286-1, 14X297-1 use 40mfd @ 400V, 40mfd @ 350V, 40mfd @ 25V in this application (Part #30P292).
Note 2. Not used in Ch. 14X286-1, 14X297-1.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C33	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	50000		BPD-05	DD-503		6DP-3-503	BT-150	5HK-S50
C36	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C37	10000		BPD-01	DD-103	BYA10S1	CCD-102	B-110	5HK-S10
C38	200 N1500 5%	#30 P322						
C39	680 N330 10%	#30P323						
C40	.02 400V		P4151N-022	DD-203	BC6S22J	4DP-2-203	ACE612	2SE-S22
C41	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C42	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	2000		BPD-D2	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C47	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C48	.05 400V		P4151N-047	DD-503	BC6S47J	4DP-3-503	ACE6147	4SE-S47
C49	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	2HV-110	20HKB-S1
C50	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S5
C51	4 25V	#30P278-3	P1589ZXY-4					121P40501R5S2 ①
C52	2 25V		P292ZN-2		WMF1W2E			121P20501R5S2

① Not used with Ch. 14X286-1, 14X297-1, 14X299-1.

Webcor Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA WEBCOR PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R29A	1meg	½	31P143-2					Audio Level, Stereo
B	1meg Taps @ 150K & 300K	½						Audio Level, Monaural
R30	1meg	½	31P141					Bass
R31	1meg	½	31P141					Treble

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R32	47K	
R33	100K	
R34	2.2meg	
R35	100K	
R36	3300Ω	
R37	18K	
R38	120K	
R39	39K	
R40	100K	
R41	56K	
R42	1500Ω	
R43	15K	

ITEM No.	RATING	REMARKS
R44	180K	
R45	2700Ω	
R46	470K	
R47	100K	
R48	100K	
R49	1000Ω	
R50	47K	
R51	33K	Note 1
R52	150K	
R53	150K	
R54	135Ω 4% 5W	Note 2
R55	2.7meg	

ITEM No.	RATING	REMARKS
R56	100K	
R57	2200Ω	
R58	3900Ω	
R59	470K	
R60	47K	
R61	2200Ω	
R62	22K	
R63	220K	
R64	2700Ω 7W	Note 3
R65	1500Ω 5W	Note 4
R66	390Ω 2W	Note 5

Note 1. Not used in Ch. 14X286-1, 14X299-1, 14X296-1, 14X297-1.
Note 2. Ch. 14X286-1, 14X297-1, 14X299-1 use 270Ω 2W in this application.
Note 3. Ch. 14X299-1 uses 4500Ω 7W in this application. Not used in Ch. 14X286-1, 14X288-1, 14X297-1.
Note 4. Ch. 14X288-1 uses 22K in this application. Not used in Ch. 14X286-1, 14X297-1, 14X299-1.
Note 5. Ch. 14X286-1 14X297-1 use 1000Ω 5W in this application. Ch. 14X288-1 uses 2200Ω 1W and Ch. 14X299-1 use 500Ω 7W.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .99A	670VCT @ .110A	5V @ 2A	68P048-2 ①	22R32 ②			P-8176 ②	22R32 ②	
	SEC. 3	SEC. 4	SEC. 5							
	12VCT @ 4.5A									

① Alternate Part #68P070 for Ch. 14X290-1. Ch. 14X286-1 uses Part #68P068.
Ch. 14X288-1 uses Part #68P069. Ch. 14X297-1 uses Part #68P050. Ch. 14X299-1 uses Part #68P071.
② Drill new mounting holes. Connect 6.3V windings in series and phase.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA WEBCOR PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	6000Ω CT	16Ω	67P069 ①	24S55	A-2904 ②	AU-609	A-3830	24S55	S-57Z	

① Used in Ch. 14X288-1, 14X290-1. Ch. 14X286-1, 14X299-1 use Part #67P067. Ch. 14X297-1 use Part #67P071.
② Drill new mounting hole.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA WEBCOR PART No.	QUAM PART No.	NOTES
SP1	15"	PM	15-16Ω	76P085 ①	15A1Z16	① Models 1996, 1997, 1998
SP2	6"	PM	15-16Ω	76P082-2 ②	6A1Z16	② Models 1959, 1996, 1997, 1998
SP3	3½"	PM	7-8Ω	76P081-1 ②	3A15T	③ Models 1959
SP4	3½"	PM	7-8Ω	76P081-1 ②	3A15T	④ Models 1968, 1969, 1992, 1999
	12"	PM	15-16Ω	76P086 ③		⑤ 2 used in Models 1968, 1969, 1992, 1999.
	10"	PM	7-8Ω	76P088 ④		⑥ Models 1965
	4"	PM	7-8Ω	76P077-1 ⑤		⑦ 2 used in Models 1965.
	6" x 9"	PM	7-8Ω	76P051 ⑥	69A3Z7	
	4"	PM	21-22Ω	76P050 ⑦	4A1Z22	

AMP PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	WEBCOR PART No.	REPLACEMENT DATA
K3	Tone Compensation	5000mmf, 5000mmf, 120K, 120K, 120K	62P033	
K4	Loudness Tone Comp.	150mmf, 200mmf, 2200mmf, 5000mmf, 47K, 120K	62P019	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							
	WEBCOR PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		JENSEN PART No.		SONOTONE PART No.	
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE
M3	21P588	* 13-TB	Not Req.	† 66	Not Req.			* 8T-S	N-8TA-S

* Includes mounting mechanism. † Use PT-3 mounting mechanism.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	WEBCOR PART No.	CLEVITE WALCO PART No.	JENSEN PART No.	
M4	† 21S617-S or ♦ 21S617-SD	† S69X or †♦S69XSD or ♦ S69XD	† W-103STSS or †♦W-103STSD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	WEBCOR PART No.	NOTES
M5	Switch	32P137	Selector, Chassis 14X290-1 and 14X299-1
	Switch	32P138	Selector, Chassis 14X286-1, 14X288-1 and 14X297-1
	Printed Board	62P027-1	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

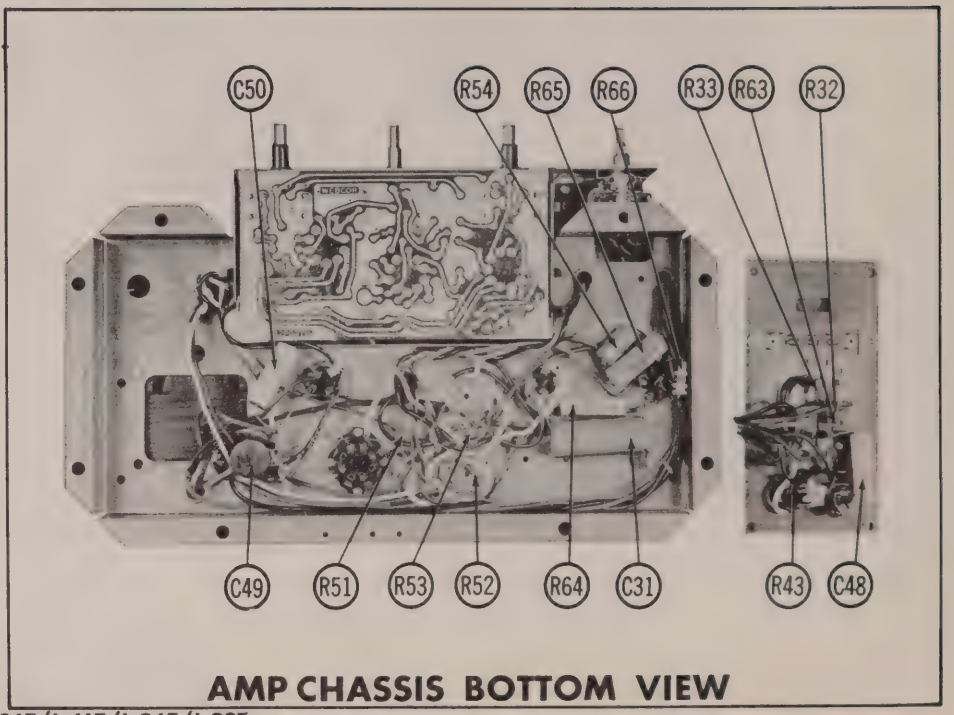
NAME	PART NO.	DESCRIPTION
Knob	49X297-C	Tuning, Model 1992 & 1999
Knob	49P332-2	Tuning, Model EC-1996-1, MC-1996-1, PC-1997-1, WC-1997-1, BC-1998-1, EC-1998-1, MC-1998-1, WC-1998-1
Knob	49P332-1	Selector, Model EC-1996-1, MC-1996-1, PC-1997-1, WC-1997-1, BC-1998-1, EC-1998-1, MC-1998-1, WC-1998-1
Knob	49X297-2C	Selector, Model 1992 & 1999
Dial Pointer	45P2451	Model EC-1996-1, MC-1997-1, WC-1997-1, BC-1998-1, PC1997-1 EC-1998-1, MC-1998-1, WC-1998-1, 1992, 1999
Dial Window	77P012	Model EC-1996-1, MC-1996-1, PC-1997-1, WC-1997-1, BC-1998-1, EC-1998-1, MC-1998-1, WC-1998-1,
Dial Window	77P013-1	Model 1992, 1999
Knob	49P337-3	Volume, Inner, Model 1959
Knob	49P336-2	Volume, Outer, Model 1959
Knob	49P337-1	Volume, Inner, Channel 1 (Monaural), Models 1996, 1997, 1998, 1992, 1999
Knob	49P337-3	Volume, Inner, Channel 1 (Monaural), Models 1968, 1969
Knob	49P336	Volume, Outer, Channel 2 (Stereo), Models 1996, 1997, 1998, 1992, 1999
Knob	39P206-2	Volume, Model 1965
Knob	39P210-1	Volume, Model 1965, Stereo
Knob	49P337-4	Tone Controls & Selector, Inner, Model 1959
Knob	49P335	Tone Controls & Selector, Outer, Models 1959, 1968, 1969, 1996, 1997, 1998, 1992 & 1999
Knob	49P337-2	Tone Controls & Selector, Inner, Models 1996, 1997, 1998, 1992, 1999
Knob	49P337-4	Tone Controls & Selector, Inner, Models 1968, 1969
Knob	49P336-2	Volume, Outer, Channel 2 (Stereo) Models 1968, 1969
Knob	39P212-1	Tone Controls & Selector, Model 1965
Cabinet	92X089-1	Model MC1959
Cabinet	92X089-2	Model BC1959
Cabinet	92X089-3	Model WC1959
Cabinet	92X089-4	Model EC1959

CABINETS & CABINET PARTS (cont)

NAME	PART NO.	DESCRIPTION
Cabinet	92X100-1	Model WC1968
Cabinet	92X100-2	Model BC1968
Cabinet	92X096-1	Model MC1969
Cabinet	92X092-2	Model PC1969
Cabinet	92X065-4	Model MC1965
Cabinet	92X065-5	Model BC1965
Cabinet	92X065-6	Model CC1965
Cabinet	92X097-1	Model MC1996
Cabinet	92X097-2	Model EC1996
Cabinet	92X097-3	Model PC1997
Cabinet	92X097-4	Model WC1997
Cabinet	92X098-1	Model MC1998
Cabinet	92X098-2	Model EC1998
Cabinet	92X098-3	Model WC1998
Cabinet	92X098-4	Model BC1998
Cabinet	92X096-3	Model MC-1999
Cabinet	92X100-4	Model BC1992
Cabinet	92X100-3	Model WC1992
Cabinet	92X096-4	Model PC1999

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



AMP CHASSIS BOTTOM VIEW

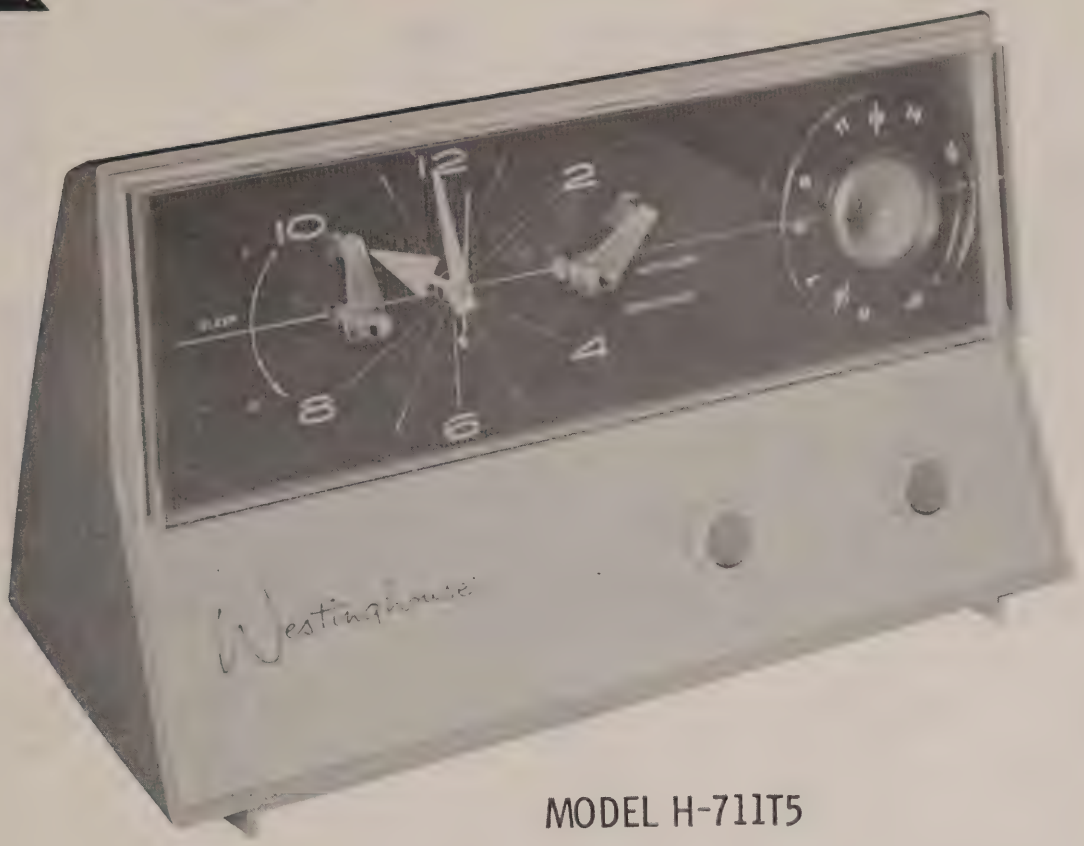
WEBCOR MODELS 1959-1, 1965-1, 1968-1, 1969-1, 1992-1, 1996-1, 1997-1, 1998-1, 1999-1 (Ch. 14X285-1, -2, 286-1, 288-1, 290-1, 297-1, 298-1, 299-1, 73X015-1, 016-1)

FOLDER 17

PHOTOFACT® Folder with CIRCUITRACE®

WESTINGHOUSE MODELS H-708T5, H-709T5, H-710T5, H-711T5 (Ch. V-2398-5)

WESTINGHOUSE MODELS
H-708T5, H-709T5, H-710T5,
H-711T5 (Ch. V-2398-5)



MODEL H-711T5

WESTINGHOUSE MODELS
H-708T5, H-709T5, H-710T5,
H-711T5 (Ch. V-2398-5)

TRADE NAME	Westinghouse Models H-708T5, H-709T5, H-710T5, H-711T5 (Ch. V-2398-2)
MANUFACTURER	Westinghouse Electric Corp., Metuchen, New Jersey
TYPE SET	AC Operated 5 Tube AM Receiver with Electric Clock
POWER SUPPLY	105-120 Volts AC, 60 Cycles
RATING	26 Watts, .25 Amp. @ 117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	535-1625KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4 .... GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru 200 mmf to antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1625KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	Tune to 1400KC signal	"	A6	Adjust for maximum output while rocking tuning gang.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1960 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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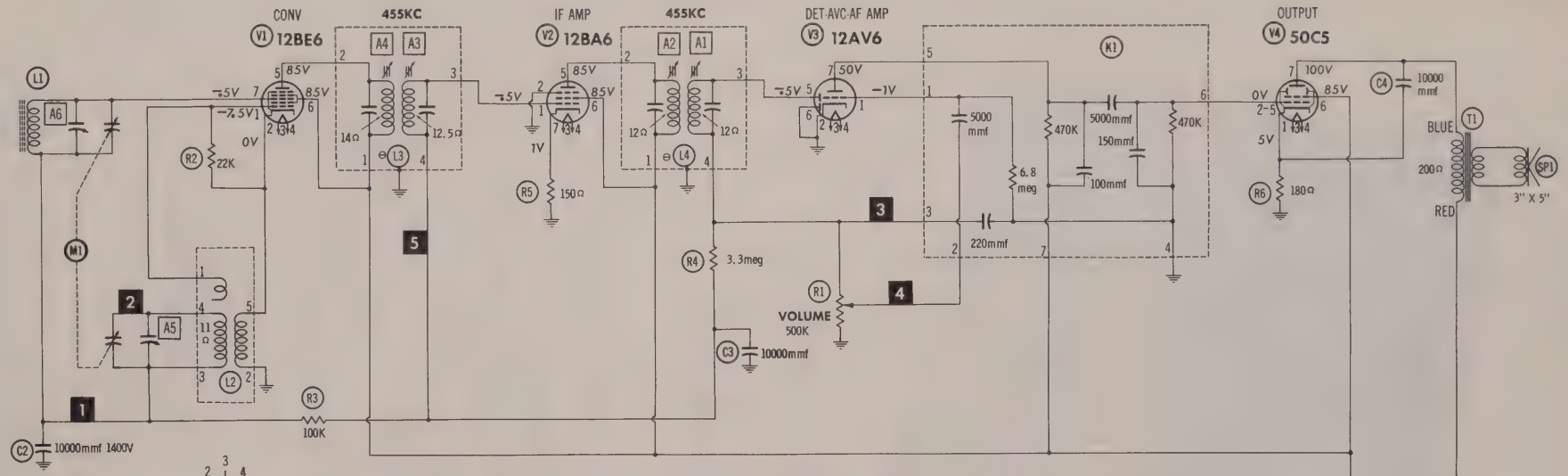
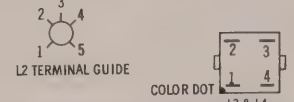




DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

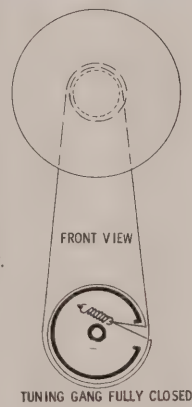
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	12Ω	24Ω	†1500Ω	†1500Ω	3.9meg
V2	12BA6	3.8meg	0Ω	36Ω	24Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	180Ω	470K	36Ω	86Ω	470K	†1500Ω	†200Ω
V5	35W4	NC	NC	86Ω	120Ω	120Ω	110Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.

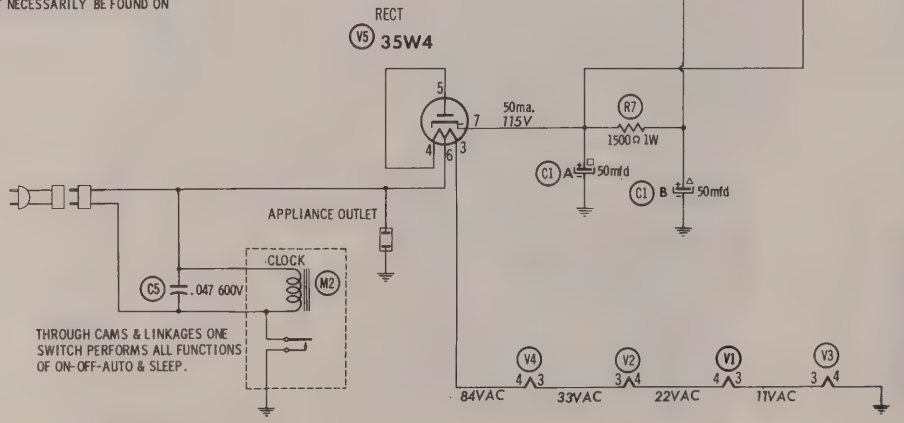
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



TUNING GANG FULLY CLOSED

DIAL CORD STRINGING



A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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WESTINGHOUSE MODELS H-708T5, H-709T5, H-710T5, H-711T5 (Ch. V-2398-5)

PARTS LIST AND DESCRIPTIONS

TUBES

◆ CBS ◆	GENERAL ELECTRIC ◆	RAYTHEON ◆	SYLVANIA ◆

ITEM No.	USE	TYPE
V1	Converter	12BE6
V2	IF Amplifier	12BA6
V3	Det. -AVC-AF Amp.	12AV6
V4	Output	50C5
V5	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪50	150	218V025H07	PWH2-15-05	XBO161 ‡	FP214 ♦	TDLD-9	PCLS-2435.1*	
B	▲50	150							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
‡ Use printed circuit adaptor #55277 and 55278. ♦ Use adaptor Kit FPA.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000 1400V		DAC-27	DD16-103	HVE16S1	16DP-3-103	UAC-110	BL-S10
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C5	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	500K	½	270V027H14					Volume

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	22K	
R3	100K	
R4	3.3meg	
R5	150Ω	
R6	180Ω	
R7	1500Ω 1W	

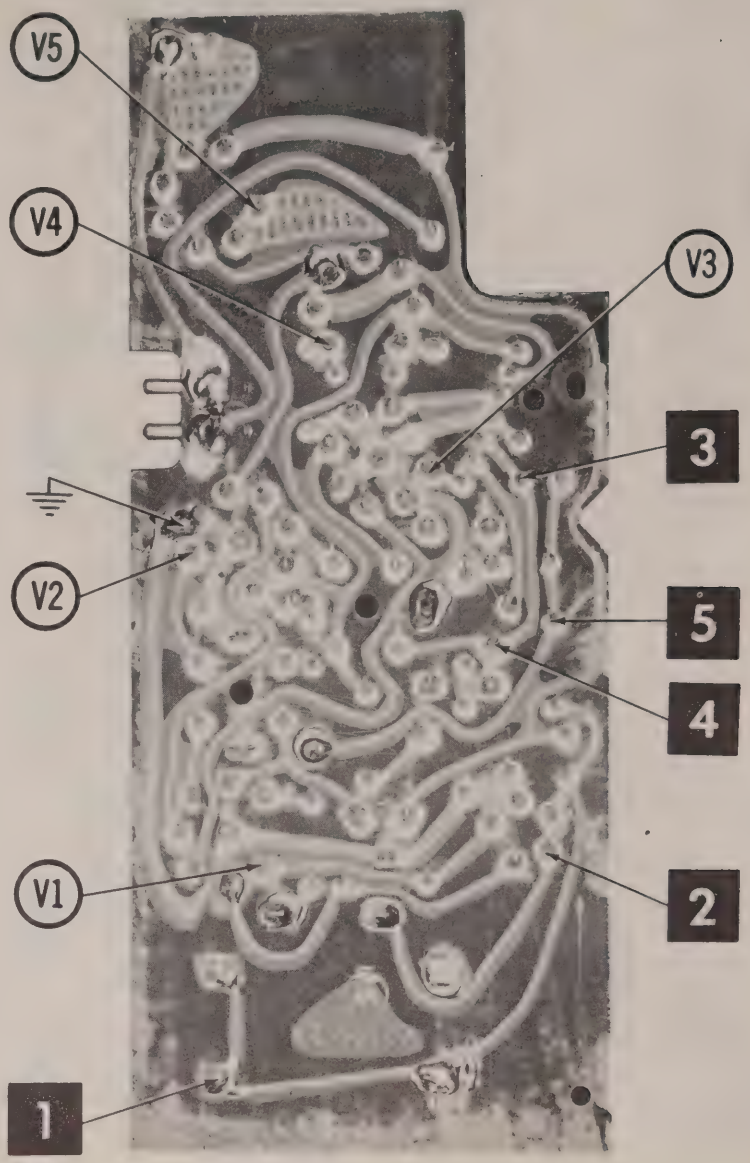
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA	
K1	Audio Coupling	100mmf, 150mmf, 220mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg	219V001H01	Aerovox Centralab Sprague	PA-512-3 PC-158 DT-5

PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Westinghouse PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	310V051H01			BC-419			
L2	Osc. Coil	230V040H05						
L3	Input IF	235V053H01 †	16-6780	16-6780	BC-356	13-PC1	RF-4	
L4	Output IF	235V053H02 †	16-6780	16-6780	BC-357	13-PC2	RF-4	

† Alternate Part #235V023H11.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	(Part of SP1)	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	3" x 5"	PM	3-4Ω	570V064H01 *	35A05	* Includes T1

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Cap.	330V030H01	2 Gang
M2	Clock	650V016H02	Westclox (ATS-5), Less Hands, Background & Shaft Extension

CABINETS & CABINET PARTS

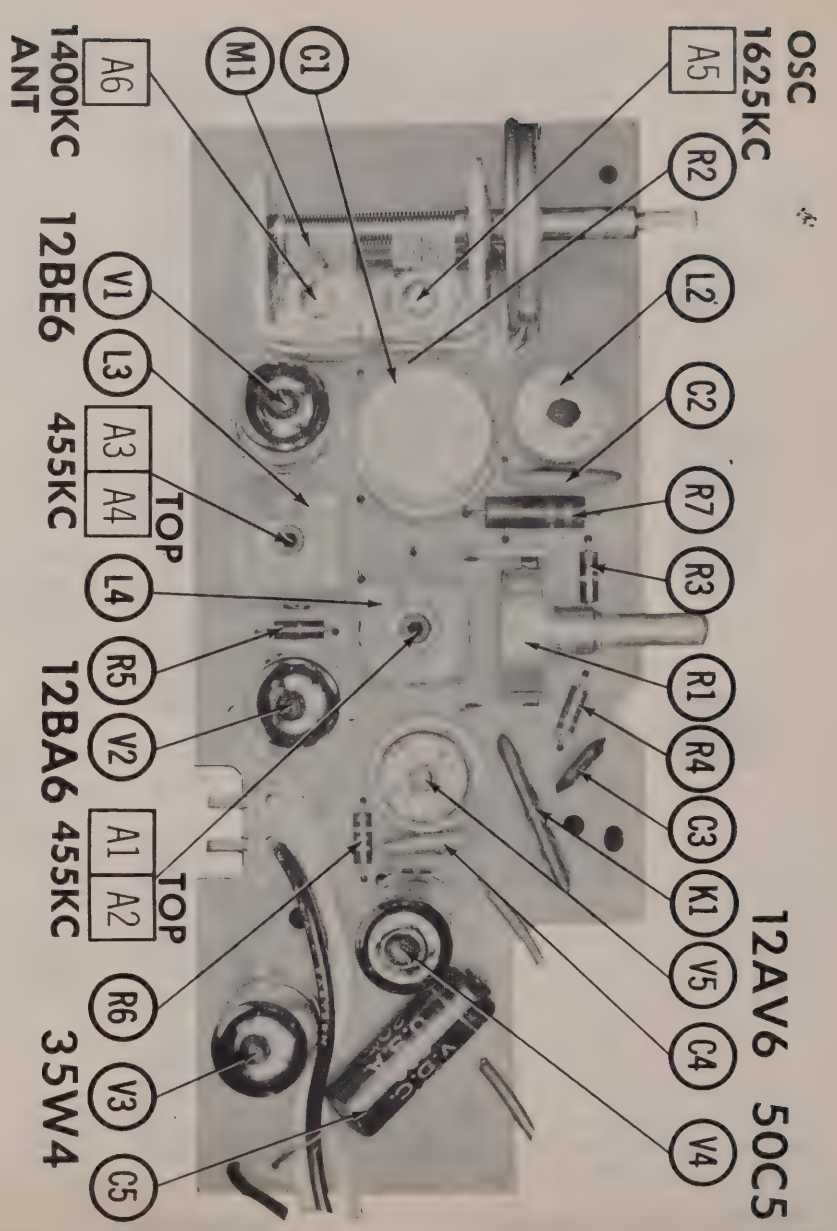
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

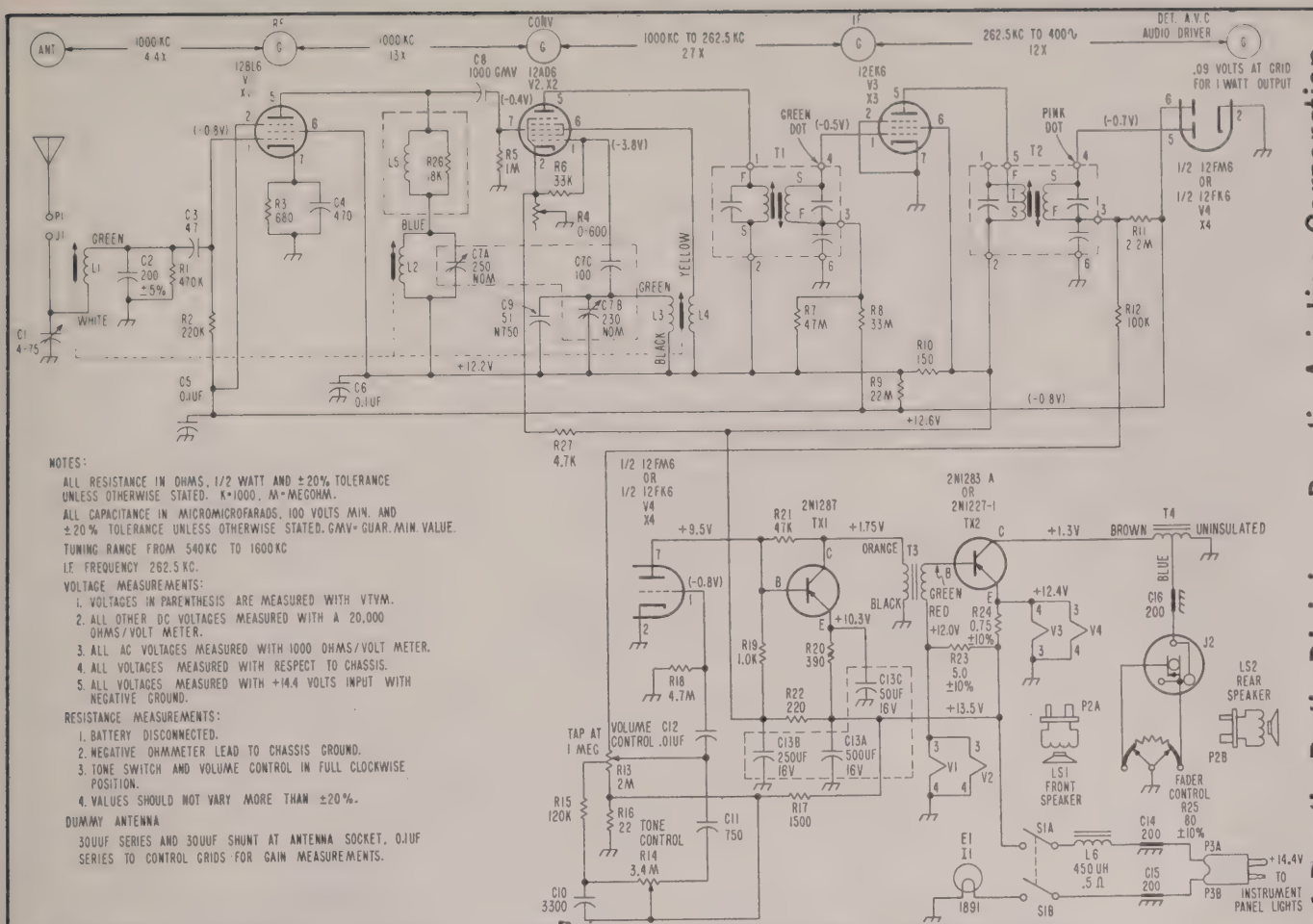
NAME	PART NO.	DESCRIPTION
Knob	550V101H04	Tuning
Knob	550V101H05	Volume
Knob	550V053H01	Clock
Knob	550V117H02	Dial
Cabinet	513V043H04	Model H-708T5
Cabinet	513V043H05	Model H-709T5
Cabinet	513V043H06	Model H-710T5
Cabinet	513V043H07	Model H-711T5
Cabinet Front	558V237H01	
Crystal	558V241H01	Clock

WIRING DATA

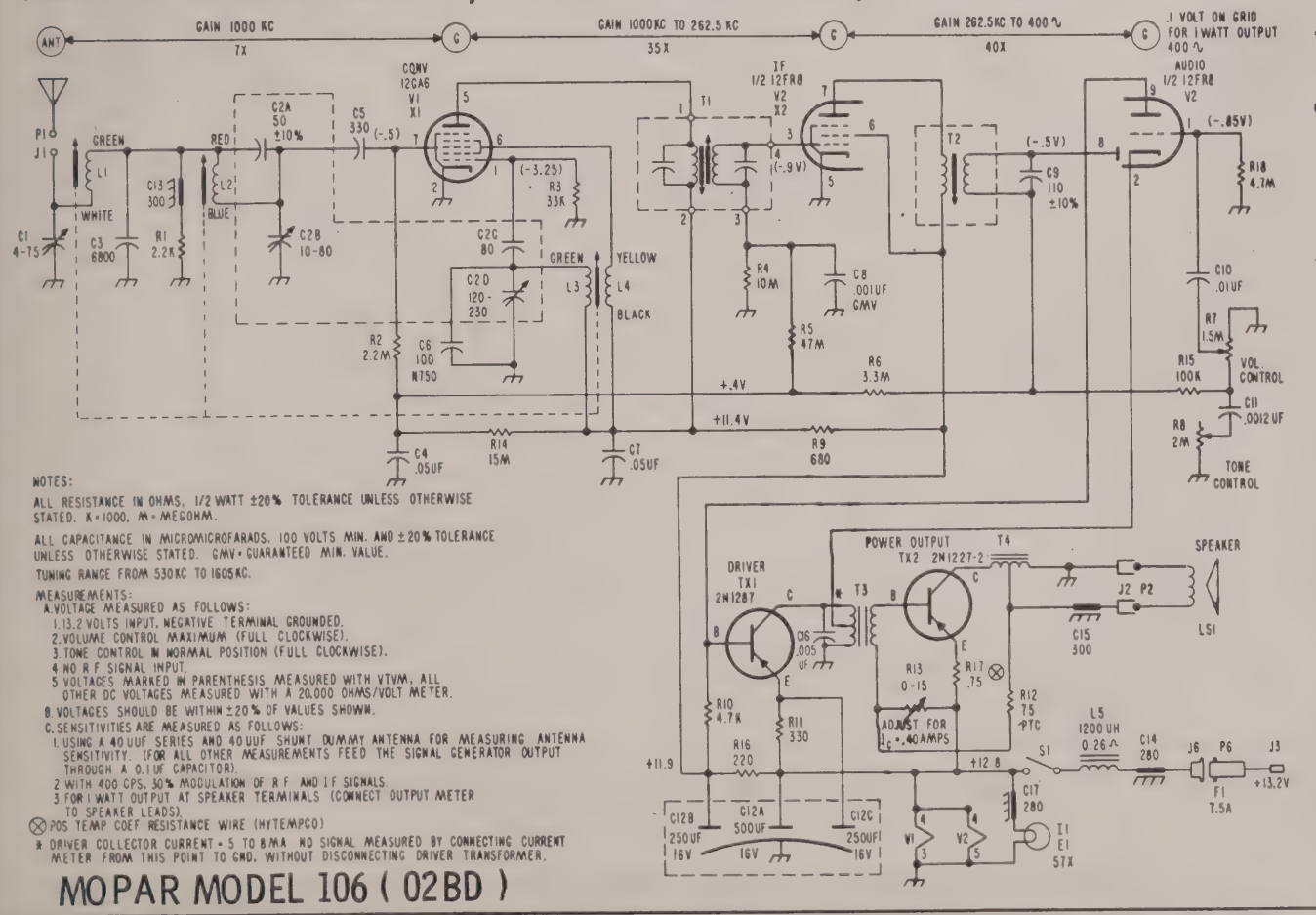
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874

CHASSIS—TOP VIEW



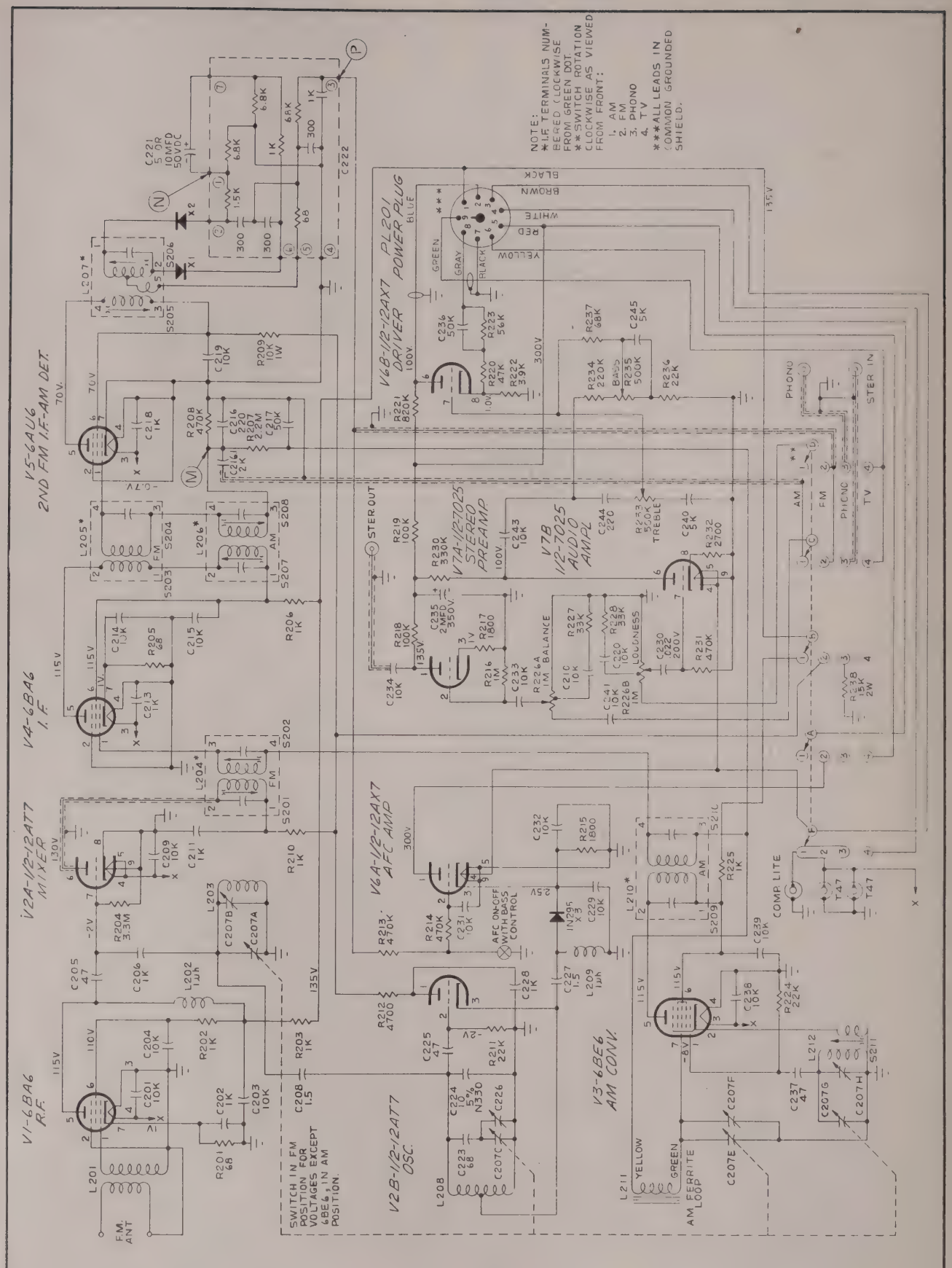


MERCURY MODELS 04BM-1, 04BM-2 (COMF-18805, COMF-18806)



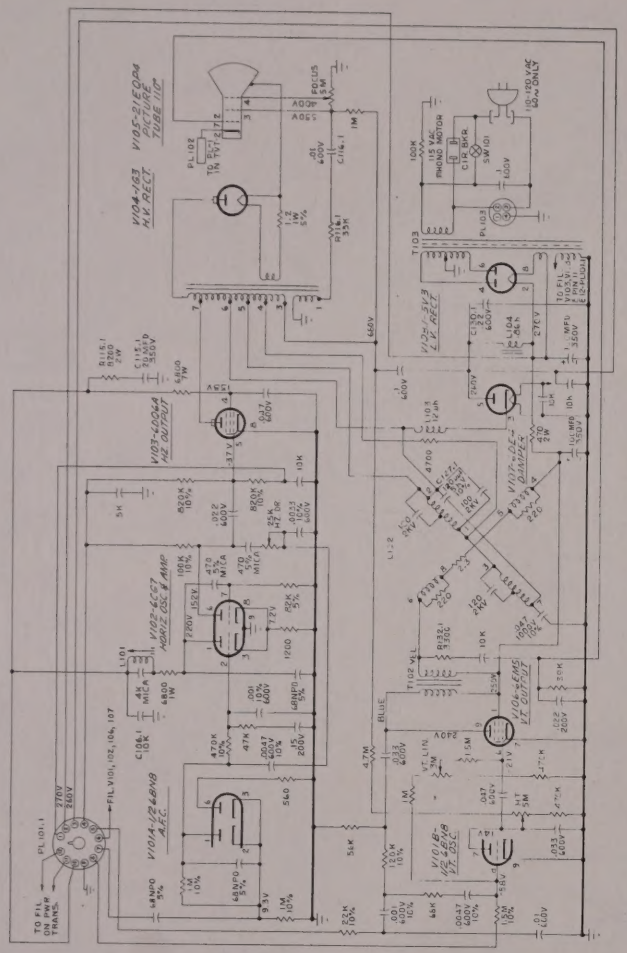
MOPAR MODEL 106 (02BD)

Schematic Diagrams Courtesy of Bendix Radio Division: Bendix Aviation Corporation

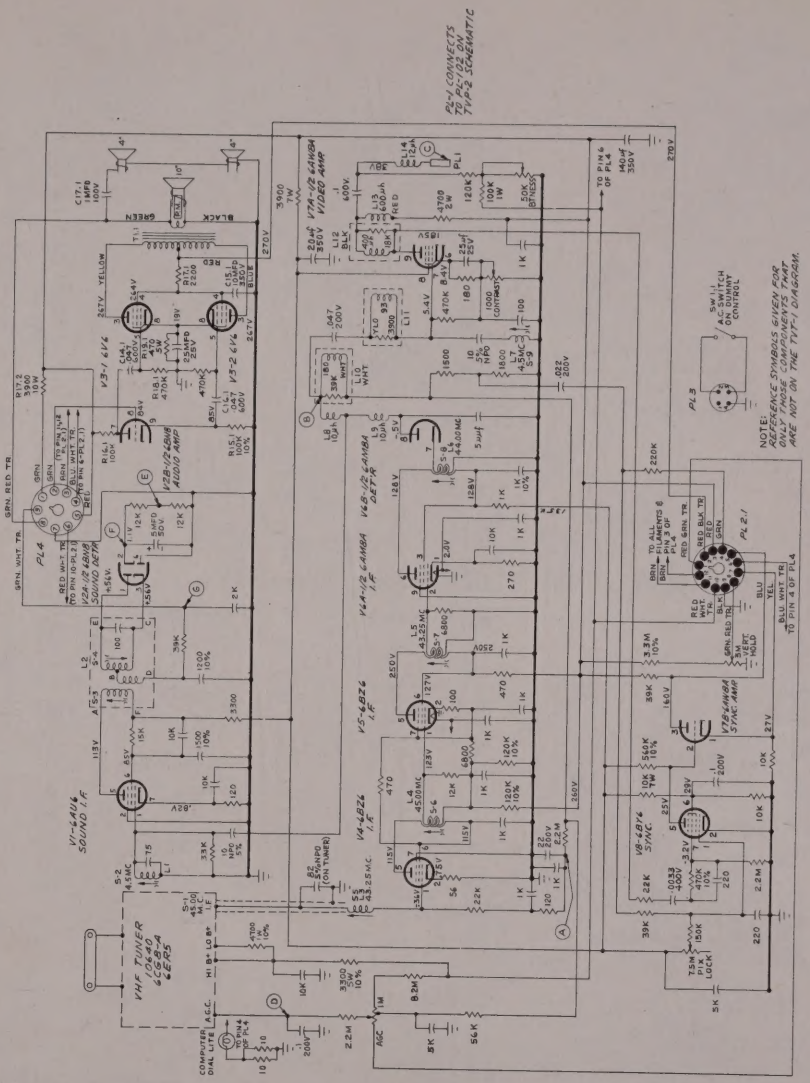


PACKARD BELL MODEL 21K2 (CH. 7TU-3)

Schematic Diagram Courtesy of Packard Bell Electronics Corporation



CHASSIS TVP-2



CHASSIS TVT-2

PACKARD BELL MODELS 17T1, 21C3, 21K2, 21T2, (CH. TVP-2, TVT-2, 7TU-3)

Schematic Diagram Courtesy of Packard Bell Electronics Corporation

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